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Issue 123 • 16th March 1991 • 88p

NEW COMPUTER EXPRESS

FIRST NEWS • FIRST REVIEWS • BEST BUYS • YOUR WEEKLY GUIDE

THIS WEEK

AMIGA
The 1Meg Amiga you can buy for the price of an A500 **PLUS** A superb scanner for less than £200

ATARI
The ST gets its own HyperCard **PLUS** News of the MIDI show of the year

PC
Soon you'll be able to buy a Mac Classic on a card!

MACINTOSH
Another Mac clone is all set to undercut Apple...

AMSTRAD'S POWER STATION

DOS
AMSTRAD
S.O.S.

Exclusive details – page 5

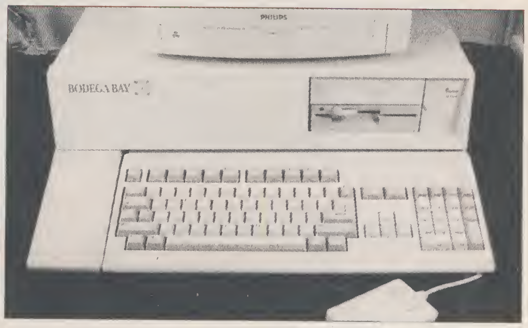
APPLE'S AMAZING NEW PRINTERS

For £365 you can now have near-laser quality

THE BRICK:

What is it? What can it do? and why is it so exciting?

BODEGA BAY:



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frontend

edited by Colin Campbell

JAPANESE WAR SIM OUTCRY

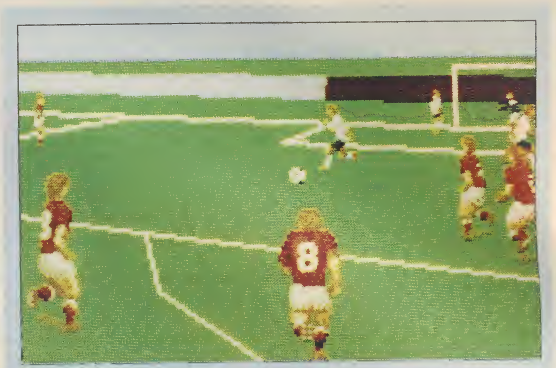
In a move which might herald the end of the road for war simulations in Japan, the Japanese Government has clamped down on software publishers using gory military images in games.

The Japanese, who were constitutionally banned from entering the recent Gulf War and received heavy criticism for its role in the crisis, are understandably sensitive about images of war.

The Ministry of International Trade and Industry (MITI) has told games publishers that not only should they avoid using war pictures to sell their games, they should even stop selling the games out right! The thinking behind all this is that the number of war related titles which are being produced for Japanese gamers could encourage war.

Not content with berating the game makers, the MITI has also lashed out at computer magazines which advertise and feature the products. Specifically sited was *Icon* magazine which recently ran a feature on a new Gulf War simulation. Icon is published by ASCII, whose president, Kazuhiko Nishi, agreed that the article was in bad taste but pleaded freedom of expression. ▪

• *War games might be stopped in Japan*



• I Play 3D Soccer: *more footy, but watch out for number 8's studs!*

Soccer to you

What the World Cup didn't do for computer football could be written on the side of a Grimsby FC attendance sheet. Even software house PR people are aquainting themselves with terms like off-side, total football and gooooooooooooooooooal! And yes, you guessed it, this is all leading to a story about yet another footy sim.

This one is called *I Play 3D Soccer* and it comes from Simulmondo and is said to have scaled bit-mapped, 3D vector graphics among other whizzy game development terms. Gamers take play in one position and view the game from that angle. Changing position to keep up with the game is also allowed. You can either play the computer or another human. Different levels of difficulty are included as are various match lengths. Of course, it was designed in Italy.

Available this very month for budding Beckenbauer's with C64s, Amigas, STs and PCs. Price is £24.99. ■

Sony's micro-movie tie in

• *Now that Sony has bought Ghostbusters maker Columbia Pictures, games programmers will be on the set as the film is made, enabling games to be launched at the same time as the film.*

Like an unstoppable blob from a 1950s B movie, Sony has expanded its software division yet again. The new addition is called Sony Electronic Publishing and will work closely with Columbia Pictures, the company responsible for such films as *Look Who's Talking* and *Ghostbusters*. Columbia Pictures was recently purchased by the Japanese giant.

Sony Software's president, Michael P Schulhof commented: "This is an exciting opportunity for Sony to focus on new areas in entertainment, education and information. It will provide additional creative opportunities for the Columbia Pictures and Sony Music staffs to work with Sony Electronic Publishing in developing new expressions in entertainment.

"We will also continue to work with our hardware company to support new innovative products that Sony brings to the market. We will develop software on several formats, including CD-based products, interactive multimedia, video games and other optical and magnetic technologies".

This is likely to mean film tie-ins to be released on CD-ROM format especially for Nintendo's Super Famicom computer. Because the tie-in between Columbia Pictures and Sony Electronic Publishing will be so close, they are both based in New York. The chances are that programmers will be on the sets when the film is being made and will launch games at the same time as the film rather than months afterwards. ■

Crazy computer cuts voters

The chairman of Clitheroe Conservative party is one of several voters who had their names removed from the electoral register in the Ribble Valley by-election by a crazy computer.

Mr Martyn Noble is the unlucky Tory nabob, a random victim of a data processing firm's computer. The firm was supposed to amend the register taken from council computer sheets. It seems that its computer went whacko removing names willy nilly.

Paul Timpson, Deputy officer for the constituency, said: "Unfortunately Electoral law means that there is nothing we can do. People whose names have been omittedfrom the register will be unable to vote".

Following this computer disaster and the shock Tory defeat, Ribble Valley council is considering whether to sue the unnamed data processing firm. ▪

Dolphins digital deals

Everyone remembers Flipper being a wonderfully helpful creature, but not even that aquatic hero ever helped scientists improve digital communications.

Other dolphins are somewhat more helpful in this way, as scientists studying the way the ocean going mammals communicate have found out.

According to boffins who are trying to understand dolphinese at Rochester University in New York, USA, the codes derived from the way dolphins speak to each other can be used to help computers do the same. They have found that the codes can be used to cut down on the amount of 'cross-talk' in digital communication. This has the potential to increase the number of channels available in all forms of communication which use digital systems.

Squeak squeak! ▪

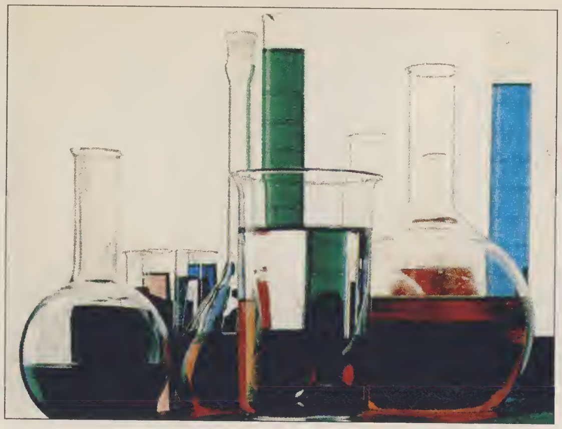
What a touching story

Ever had problems getting information out of a British Rail employee? Do you have to shout or even plea to get the time of the next train to Reading? Well in the near future you may have to touch them as well!

That's if a trial program currently working at Cambridge BR station works out. Sitting on the platform at the university town is the UK's first interactive computer timetable with a touch sensitive screen. At the moment it is linked to a PC in the enquiries office and allows users to plan their routes. The plan is to extend the system so that it can handle timetable information and ticket prices as well.

Get in touch with a BR worker for digital information. ■

CHIP CUTS DOWN ON DRUGS



Scientists in America have developed a tiny 1cm squared chip upon which they have built 1,024 chemicals.

Using a system called Very Large Scale Immobilised Polymer Synthesis (VLSIPS) small amounts of chemicals can be layered onto chips and evaluated. Not only does this speed up the process of study, it also means that extremely small amounts of chemicals need to be used to gain the same results as previous test tube and spatular methods.

The process starts by overlaying the chip with chosen chemicals, or 'building blocks'. The next stage is to wash it in another chemical which will react with these blocks. The reactions can be tightly controlled by exposing certain areas of the chip to light from a computer guided laser.

Different areas of the chip are exposed to different amounts of laser-light allowing for many separate compounds to be built-up in the same 1cm squared area. Unlike the old lab experiments where one scientist would have to spend time studying a single chemical reaction, a computer can be programmed to observe and note all 1,024 reactions at the same time.

This technique can be extended not just to synthesising new drugs for uses in medicine, it can also be used, claim the scientists in California, to create DNA strands, accelerate DNA 'fingerprinting', and even detect invisible micro-organisms for use in blood and food testing. ■

Russian RAM robbers

Thieves who stole 100,000 RAM chips in Russia could be looking at the death sentence. The Soviet authorities have already started a massive hunt for the crooks who made off with 2.2 million roubles worth of silicon booty.

The raid took place at a factory in Zelenograd in the north west of Moscow.

The danger, as the Soviets see it, is that the thieves will attempt to sell the chips back into the black market at inflated prices. It is well known that the black market in computer goods fluctuates daily and that large sums of money could be made by the perpetrators of Russia's biggest ever computer hardware theft.

Time, however, is of the essence for the brigands. With the police acting quickly the chip nabbers could be looking at 8 to 15 years in prison or even death, if the full powers of the USSR's criminal code article 93 is enforced.

Still on the Russian theme. Subscriptions are now available to Soviet computer mag *Koncern File*. The price for a year's worth of cutting-edge Soviet info is 1,500 roubles – that's about £30 at real rates. For more information, or to order you copy, you should call USSR 0107 812 143 0267 and ask for Boris Vagapov. ■

CHIPMAKERS BID FOR GLORY

American chip makers were badgering George Bush recently in a bid to raise their commercial profile and moan about European trade tariffs following the Gulf Techno War.

Known as the 'war card' it has been played by the big semiconductor manufacturers for some years now, but has never been so potentially successful since the use of computer guided Patriot missiles.

In a letter to President Bush, the chippers commented: "We are proud of America's men and women in the Gulf and of the role of American technology in this effort exemplified by the Patriot missile. Our industry supplies the American semiconductors which make these high technology weapons possible".

The corporations claim that less than 10 per cent of their trade is carried out with the military and that commercial business was what drove the technology behind the war effort. In a comment aimed directly at European markets, the chippers noted: "To preserve our ability to make advanced products we need the GATT talks to result in a tariff-free environment for trade in technology and computers".

Whether or not the rest of the Coalition agrees to these claims following the defeat of Saddam, remains to be seen. The chip makers know the honeymoon can only last for a short period in the commerical battlefield. ■

• George Bush: badgered by US semiconductor makers.

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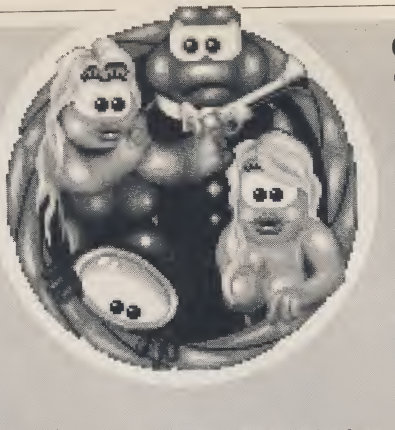
Latest IBM portable leaked

Details of the latest IBM notebook computer were leaked to the press last week. The newest portable from the Stateside giant is called the PS/2 L40SX.

Weighing in at 8lbs, the machine comes with 2Mb of onboard RAM, a 10-inch monochrome, edge-lit liquid crystal display in VGA mode, and a 60Mb hard disk. Also included is an internal fax and modem, and 3.5-inch floppy drive. The whole thing is powered by a single rechargeable battery.

Six expansion ports are built-in: parallel/Centronics, serial, colour VGA for an desktop monitor, mouse, numeric keyboard and an AT bus expander. In order to preserve battery life there are also plans for 'smart' power down routines.

Along with these details comes news of several price reductions on IBM's PS/2 family of machines in the United States. The cuts range from 5 per cent to as much as 20 per cent. Whether these price changes will affect European IBM PS/2 machines has not yet been announced. ■



• James Pond – *onto the Mega Drive in April and into a bionic fish in the winter.*

Six million dollar fish

James Pond, Underwater Agent, is due to undergo two dramatic changes this year. The first comes in the form of a sequel to the original game, provisionally titled *Robocod*, for the ST and Amiga with the possibility of a 16-bit console version to follow.

Ian Saunter from publisher Millenium, said: "James has to go on a land-based mission to thwart the evil Doctor Maybe. To make the entire mission out of water, James has to be bionically altered. Someone had to do it and he volunteered." Whether James is able return to his normal self at the end of the game, "depends on the outcome of the game," says Saunter.

The other change is more immediate, as *James Pond*, the original game, is set for release on the Sega Mega Drive in April, priced at £39.99. It will be the first Mega Drive game both designed and coded in Britain. ■

The right hook

Boxing sims move into a new dimension of gritty realism with Mindscape's *4-D Sports Boxing*.

Modelled and simulated on actual human movement, the animation of the fighters is fluent and realistic. The game also involves management skills since you can create and save a team of up to 10 boxers of your own, setting their heights, how much they weigh and how strong they are, and then you have to train them into mean fighting machines.

4-D Sports Boxing is available now for the PC, retailing at £29.99.

Also just out from Mindscape is *Cardinal of the Kremlin*, a PC game based on a book by Tom Clancy, author of Hunt for the Red October. A Cold War adventure game with interactive animated sequences, *Cardinal* retails for £14.99.

Mindscape has also released a C-64 version of the fantasy adventure *Ultima VI* for £24.99. ■

Cleaner machine

Truly intelligent machines and peripherals have always been one of the aims of computing, and now the world has Headmax – a clever floppy drive cleaner.

Headmax comes in the form of a floppy disk which, the makers Telematic Systems claims, will clean heads on a specially formatted surface and then check to see if any more work needs to be done.

Headmax is said to go further than simply cleaning, it also carries out a diagnosis which checks for head alignment. All the cleaning facilities are accessable from a menu system. ■

SX machine, notebook and colour portable announced

AMSTRAD'S NEW BUSINESS PCs

As first predicted in *Express* Amstrad has launched three upmarket computers aimed at executives.

A small-footprint SX machine, a notebook and a colour portable were announced by the company at Cebit Hanover on Wednesday 13 March. The Amstrad PC4386SX is just about the smallest computer which can claim to be a desktop. It's about one foot square and under three inches high, yet comes with a 20MHz 386SX processor, 80Mb hard disk, two half-length expansion slots, 4Mb of memory and a 3.5-inch floppy.

To match its small size, it uses a VGA monitor with a tube size of just 10 inches. With mono monitor the machine costs £1,499, and with colour monitor (using a Sony Trinitron tube) it costs £1,699. No other options are offered.

• *The Amstrad PC4386SX – just about the smallest computer which can claim to be a desktop.*

Amstrad says it is aiming the PC4386SX at executives who have little space on their desks and little time to learn to use a computer. The machine is supplied with Windows 3, but Amstrad says this is still too complicated for many executives, so it has written an easy front-end for Windows.

When the machine boots, the Amstrad Program Manager shows icons for applications (including spreadsheet, card index and word processor) which can be selected with the mouse. The joke in Amstrad is that this makes the machine so easy to use that even Alan Sugar can manage it. Experienced users can switch to the full version of Windows 3 with a simple key combination. Most of the applications offered by the Amstrad Program Manager come with Windows 3 as standard.

The spreadsheet, however, is the trial version of Microsoft *Excel*. This has most functions of *Excel*, but worksheet size is limited. If the full version of *Excel* is bought by the user, this replaces the trial version. Other application programs which are bought separately, such as a full database or word processor, can link to the appropriate icon.

Amstrad says no compromises have been made to build the machine. It has 64K of cache memory which, combined with the 20MHz processor, makes it over a third faster than most 16MHz 386SX machines.

The 80Mb hard disk is made by Sony and has 19ms access time. A 20MHz 387SX maths processor can be fitted and the memory can be upgraded to 16Mb. The 10-inch Sony Trinitron colour tube has 0.26mm dot pitch and so is able to show the full 640x480 VGA resolution. The built-in display adaptor also has a 800x600 mode which the monitor can display, but this really needs a higher resolution monitor. The display can emulate Hercules, EGA and CGA display cards.

A full-size, 102-key keyboard is provided – the only attempt to reduce the size of this has been to minimise the border around the keyboard. The normal Amstrad mouse is included. Because Amstrad has become frustrated with the problems associated with MS-DOS version 4 it has decided to bundle version 3.3 in with the machine. At some stage the company will probably switch to MS-DOS 5, once this has been released and proved problem free.

Several companies offer small-footprint SX machines, but none has produced machines as small as the PC4386SX while still retaining two expansion slots. The Carry-I 9000 from Centreprise is smaller, but has only one expansion slot, is slower and uses an external transformer. The SX version of the Carry-I starts at £1,295, but versions roughly comparable with Amstrad's new machines are £150 more expensive.

The Amstrad PC4386SX is made in Korea and should be in the shops by June. Amstrad hopes the machine will become a status symbol among the type of executives who have previously resisted using computers.

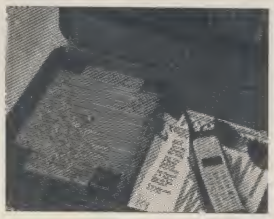
Along with the PC4386SX, the Amstrad notebook and colour-screen portable machines are hoped to boost the company's image in the corporate market. Amstrad says that much of the damage done by the 2000 series has already been compensated for by the 3000 series machines and its ALT model portables. The '4' designation of the new machine does not mean the replacement of the 3000 – they are complementary ranges, says Amstrad. ■

● See next week's issue for details on the notebook and colour-screen portable.

'Brick' PC promises desktop power where you want it

TRUE PERSONAL PORTABILITY

Billed as 'an elegant intruder into the boringly utilitarian world of personal computing', the Brick computer is the size of a ream of copy paper, contains a 20Mhz 386SX processor, 8Mb of RAM, a 212Mb hard disk and weighs just 8lbs.



Developed in the US by Ergo Computing, the machine is described by its British distributor Polaron as 'a tote-able' – a lightweight link between office and home.

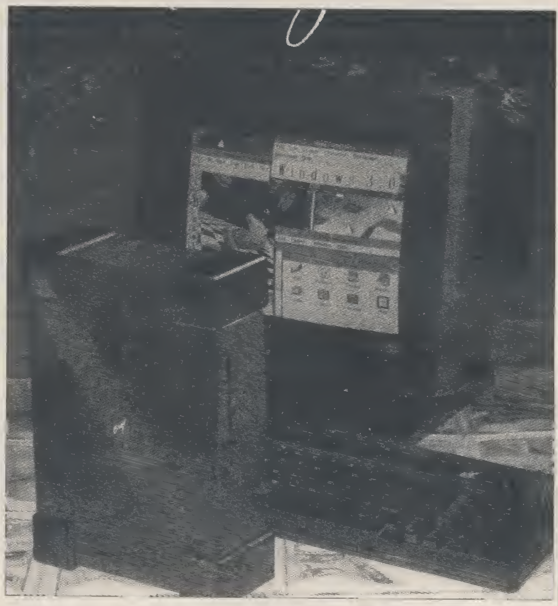
The idea behind the Brick is that you keep a keyboard, monitor and power supply at each of your working locations and carry the machine in between. The unit offers all the expansion ports you're likely to need in order to connect up to monitors, printers and keyboards.

For the serious business user, a 2400baud modem is also fitted as standard. The Brick is also capable of driving a 1024 x 768 VGA display with 16 displayable colours. It will also be complimented by a portable mono VGA LCD monitor this summer.

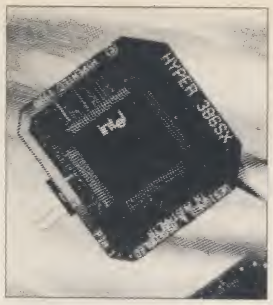
For a limited period Polaron is supplying the Brick with a 44Mb hard drive, 2Mb of RAM, two keyboards, two power supplies, MS DOS 4.01, Windows 3 and Logitech mouse for £2,760.

DAT and CD-ROM connections will also be introduced later this year as will a 486 version. More information from Polaron on 0923 240272.

Watch out for a full review next week. ■



• The Brick computer – a lightweight link between the home and office.



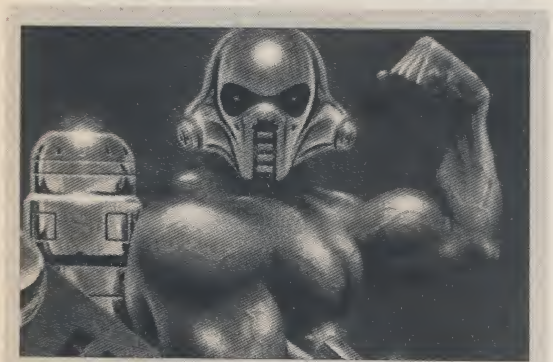
386 upgrade on a card

Hyper 386SX is the name of new credit card sized 286 to 386SX upgrade board, recently released by Australian-based Hypertec.

The board fits into the processor slot of an 80286 machine and replaces the existing chip. According to the manufacturers, the board is compatible with both micro channel and standard PC architecture. In order for the widest number of 286 machines to benefit, four configurations have been developed by the company. These are the PLCC, PGA, PLCII and Tower version.

Colin Lillywhite, general manager of Hypertec Europe said: "Once installed the boards give full compatibility with all the latest 80386-based software while retaining full compatibility with existing 80286 software and hardware."

Prices for all configurations are £259. For more information on the products you should call 0672 63936. ■



Metal mayhem

According to a new game called *Metal Mutant*, the ultimate battle machine of the future will be a metamorphosising mechanoid which can transform at will into one of three forms to ensure the optimum combat capabilities against any enemy.

In the game the metal mutant is sent to the planet Kronox to search out and destroy the evil tyrant Arod-7. On this mission your robot faces over 40 savage foes, using a huge arsenal of weaponry including missiles, axes, torpedoes, battle computers and remote flying mini-robots.

However, the game is more the more than a mere shoot-'em-up, and involves some intriguing puzzles and humourous moments, "especially a sequence involving a swiss army knife," according to Palace spokesman Richard Hennerley.

It has been written by the french-based company Silmaris, the developer behind *Colorado*. Hennerley reckons that the new game is, "very french in style. The best thing about Silmaris games is that they are always supremely playable and they also look very good."

Due out in May, it will cost £24.99 for the PC, ST and Amiga. ■

Printer firm pre-empts Apple

As Apple launched its two low-cost printers this week a company in the United States was claiming to have got there first.

GCC Technologies announced the Personal LaserPrinter II with a $999 price tag, claiming that: "Owners of the new low-cost Macintosh systems can now have the same uncompromising output quality that Macintosh users have come to expect, for a price that's more in line with the cost of their computer."

In a statement which was obviously aimed directly at Apple and its StyleWriter bubblejet printer, GCC vice president commented: "We are taking the industry lead in meeting the budgetary requirements of small businesses and educational institutions, while still providing high quality, laser printed output."

Apple's own official launches took place on March 11 with the arrival the LaserWriter LS and the StyleWriter bubblejet printers. The LaserWriter LS is a four pages per minute machine, built around a Cannon LBP-LX engine. It comes with a 50 sheet paper tray, serial connection, and 512K of on-board RAM. It comes with TrueType outline fonts rather than a full PostScript interpreter which saves Apple the cost of a PostScript licence, thus keeping the price down. According to Apple a Mac 2MB Classic with 40Mb hard disk, and LaserWriter LS bundle should cost as little as £1,795.

The StyleWriter bubblejet is aimed firmly at the owners of the Classic who want high quality printing, but can only afford a low-cost Mac. Apple claims that the printer produces laser quality print-out at 360 dots per inch. Again TrueType compatibility is built-in. The StyleWriter is expected to cost sub-£300. ■

POWER
SCORE: 00000

Extreme action

Eight-bit gamers are promised one of the largest sprites ever in Digital Integration's new SF shoot-'em-up, *Extreme*.

In the game you have to battle hordes of aliens, using a huge variety of weapons while trying to locate a self destruct mechanism before it destroys the Earth. Available for the Spectrum, Commodore 64 and Amstrad CPC at £14.95 for the disk version and £9.99 on tape, *Extreme* is in the shops now. ■

THE WEEK IN VIEW

Kenny Duval, MD of international couriers, Data Sans Frontier, wonders if The Brick will sell . . .

I spend a lot of my time on aircraft and I tell you they're no good to work on. Like airports really. And trains. The problem's not so much working with a laptop, but working while Joe Public asks you about the computer you're using. Seriously though, what use is a portable? Can't the work wait for chrissakes? It's all very well having these wonderful devices but just how long is the working day? So what use is a portable? Quite a lot, I guess, if you're in the fortunate position of owning one, yet not having a job to go to. But as for working on the move or away from the office is concerned – well of course you need one – but it needn't be some £3,000 Toshiba with a crappy LCD screen, need it? All anyone really needs is some small hand-held like the Portfolio with which you can transfer data at a later time to your office machine. Because, let's face it – all you're likely to be using one for is text entry. So anything more than £250 is a waste of space.

So, talking of space or lack of it, what do I think of the Brick? Well I'd like one of course. Maybe it's a bit pricey but I can see the reasoning behind it. 'When you've finished at the office - take your office home!' Great. Why compromise with a laptop when you can have your desktop environment with you anywhere there's a spare monitor?

But why on Earth do you think they called it the Brick? Memorable yes. But still... "I've got a Mac", "Yeah? I gotta Brick!" doesn't really sound right does it? But then there's nowt as strange as folk; particularly if they're American, so I guess it'll catch on sooner or later. Meanwhile, it does look kinda chic too – more at home on the coffee table than the desk. I can just see it now:

"Oh! what's that lovely post-modernist icon there Kenny?" "That's no icon baby, that's my extra-curricula cyber sensation."

So I wish the Brick makers good luck with their venture, but I think I'll wait until the portable VGA monitor comes out. That way I won't ever need to go home. ■

System 3 goes a bundle

Just when you thought that 8-bit owners never got a first bite of the gaming cherry, System 3 comes along and dispells the myth. C64 owners will be the sole benefactors of the company's first foray into the games compilation market.

The System 3 Premier Collection, features chop-'em-ups like *Last Ninja*, *Last Ninja II*, and *International Karate*. There's a beat-'em-up with *Myth*, a shoot-'em-up *Dominator* and the cutsey *Flimbo's Quest* and will cost £15.99 cassette, £19.99 disk.

System 3 director Mark Cale denies that it is merely clearing out its back catalogue. "This is a collection of the best games we have done over the years and we just want to create a new market." ■

Say hi Sierra!

Good news for hint-hungry gamesters; not only has Sierra On-Line, bought back the rights to its game catalogue from ill-fated Activision, it has now opened a new phone helpline. Sierra is famous in the UK for the antics of *Leisure Suit Larry* in his quest for fulfilment.

The helpline, based on the latest smash idea imported from the States and well used by companies such as Nintendo, will be a 24 hour affair. It offers game hints and technical help, is fully computerised, and you don't even need a modem to access it. All you do need to get up to the minute help is a touchtone telephone – the one with the buttons that go bleep. The hint line number is 0734 304004.

Along with this system, Sierra has launched a new bulletin board which also includes a hintline, along with downloadable demos, an enquiry facility and customer support liaison. It can be accessed with a 300/1200 /2400 baud modem and the number is 0734 304227.

However, the company's plans to release a multimedia software package have been shelved.

LEISURE SUIT LARRY IN THE LAND OF THE LOUNGE LIZARDS
"Best Adventure/Fantasy Role Playing Game of 1987"
- Software Publishers Association

• **Leisure Suit Larry** *– help will be at hand.*

Sources within the company explained that the move came because there is currently no satisfactory industry standard for multimedia systems. They further maintain that multimedia technology is developing so rapidly that any software is in danger of becoming obsolete in a very short time. ■

CBM announces 1Mb Amiga Screen Gems bundle

ONE MEG ENTRY LEVEL AMIGA

Both Commodore and Atari have plans to revamp their entry level 16-bit machines in the near future.

The Amiga 500 will be available with a free half megabyte RAM upgrade, priced at £399 in an offer which will last for a limited period, from now until the end of June.

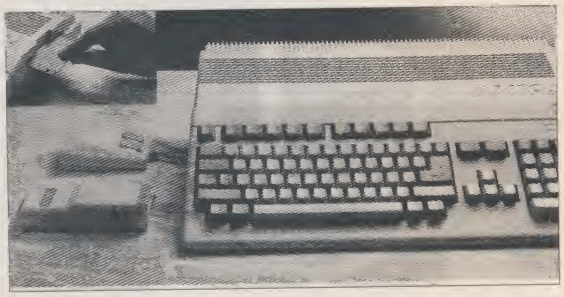
Commodore is bundling the A500 Screen Gems pack with its A501 RAM expansion unit, which normally retails for £99.

"Things are a little bit slack with the recession, and the expansion to 1Mb is ideal offer to keep sales ticking over and to make sure that the Amiga retains its number one position in the market," reckons Commodore spokesman Andrew Ball.

The move has fuelled speculation that Commodore may decide to make the 1Mb machine its entry level Amiga. However, the company is keen to point out that it will continue to produce the standard A500 while the offer lasts. In order to retain the impetus in a busy market, Ball was keen to point out that "Replacing the 512K machine with a full megabyte model is an option which we would obviously reconsider at a later date."

Not to be outdone in the race for 16-bit home computing supremacy, Atari is also to announce a special 1Mb ST package, aimed at serious computer users rather than games players. Atari's spokeman, Peter Walker, said the company sees Commodore's offer as an attempt to challenge Atari's own-lower entry level ST price point of £299. He told *Express*: "The price premium is hurting Commodore. The ST is still the ideal entry level machine for the home user, and our new package will be aimed at positioning the ST much more as a computer and not as a games machine."

For further details of Atari's strategy for the ST in the next year read *Express* next week. ■



• The Amiga Screen Gems pack. Upgraded with an extra 512K of RAM thrown in for free.

Transatlantic price parity

Borland, one of the largest manufacturers of business software in the world, is taking the unprecedented step of pricing products at exchange rate rather than straight pound for dollar.

A product on sale in the US for $800 will now cost between £400 and £450 in the UK depending on the exchange rate. This will be welcomed by software buyers more used to a pound for dollar rate on imported computers products. Current practice in the computer industry is to complain of shipping costs and import tariffs. This has maintained a situation whereby products selling for $1,000 in the US (£500) would sell for £1,000.

Borland managing director Rikke Helms said: "We need to help our channel partners match up to 1992 by ensuring that our UK pricing is in line with mainland Europe." ■

TOOBIN'
AMIGA

• Toobin': pencilled in as one of Domark's £7.99 16-bit budget launches.

And now the budget

Domark is to dive into the pool of 16-bit budget games with a new label entitled Re-spray.

***Hard Drivin'*, *Licence to Kill*, *APB*, and *Toobin'* are the most likely games to be released. A price point of £7.99 has been set for Re-spray titles, and the machines to be targeted are the ST, Amiga and PC. ■**

Telecom flat rate means 200 per cent rise

PRESTEL PRICES HIT HOME USERS

Charges for Prestel, BT's Viewdata network, are to rise dramatically for residential users from April 1.

Telecom is to introduce a flat rate charge for both home and business users. This charge is equivalent of the old business charge of £80. For home users this is a rise of £48.

Once on-line, the story gets worse with charges increasing a staggering 200 per cent; from 1p to 3p per minute, during off-peak times. There will be an additional rise from 7p to 8p per minute during office hours.

Express this week asked for an explanation of the moves from BT Managed Network Services (BTNMS), the section of the company which deals with on-line systems. BT spokesman, Chris Ott, explained: "BT can no longer afford to provide a special discounted tariff for domestic users. After all, the service provided is the same for both the home and commercial user. Frankly, the home users are a relatively small percentage of the overall user base, and if you're a business user, you will wonder why you have to subsidise these people."

In the light of the changes, a number of companies which use Prestel and are specifically aimed at the home user, such as Kays catalogues, are considering leaving the service.

But one group who may welcome the new charge are subscribers to specialist services like Micronet. From April 1 Micronet's annual subscription, which includes a Prestel subscription, will rise from £80 to £120, but users will be able to access most Prestel areas outside of office hours (8am-6pm) free of on-line time charges.

"Now our subscribers can access the service in the evening, after 6pm, as well as all day Sunday, for the price of a local telephone call. That's the equivalent of halving all their on-line costs," says Micronet editor Paul Needs. ■

Upgrade your ST database

An upgraded version of the *Adimens* database, compatible with all versions of the ST operating system and offering a full set of relational features, has just been launched for the Atari ST and TT.

***Adimens 3.0* is the latest version of the database which is backed by over 90,000 users. The package includes a 300 page manual and tutorial and an on-line help facility.**

Publisher Kuma claims it is simple to use without compromising on power and can import and export data, calculate fields, sort at multi-level, time fields, replace characters, provide graphical controls and prompt via menus.

Facilities exist to search, sort, merge, link and interface with many other programs including *KWord 2*. Multi-level sorting, date handling, error checking and file handling are completely explained and there are 'soft' editable printer drivers to allow configuration to many printers.

***Adimens 3.0* costs £129.95 and is available from Kuma Computers on 0734 844335.** ■

Super graphics card set to start shipping

A 16-bit Super-VGA colour board for PC ATs and compatibles will ship from the beginning of April. The £250 VG-5000 can be configured with either 512K or a full one megabyte of memory on board. Its 1Mb configuration supports graphics modes up to 1024 by 768 pixels.

The board, from DFI, can produce up to 256 colours and supports all of the common PC display modes including Super VGA, VGA, EGA, CGA, MDA and Hercules.

The two models available are the VG-5000A with 512K on board and the VG-5000B with 1Mb on board. The VG-5000 is designed for use within applications with an intensive graphics overhead, such as Computer Aided Design or Windows 3.

To make life easier for users, software video drivers are supplied for Windows, 286 and 386, AutoCAD, Ventura, Framework.

There is monitor support for both interlace and non-interlace monitors and the card is capable of full emulation of the IBM 8514/A graphics board. 16-bit CPU to video data translation is possible and support is offered to font editing.

For further information contact DFI on 081 461 2322. ■

Business guide on Compact Disc

The European Business Guide is the latest piece of CD-ROM-based information from Philips.

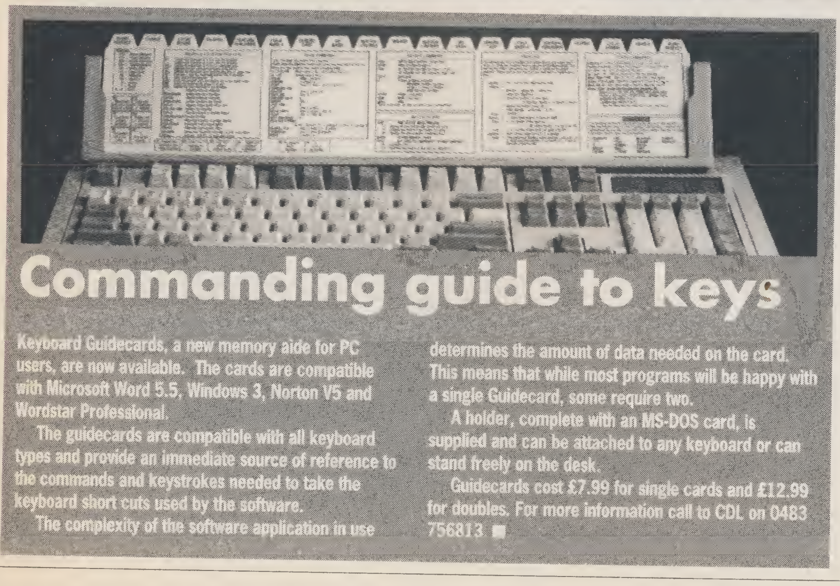
The guide contains byte after byte of information of use to the busy Euro-business person. Details are available on travel information such as flight and train timetables, foreign currency, visa regulations, and tax-free data. Also included is leisure information for those important business lunches and power breakfasts, theatres, and even golf courses.

Information relating to all of the EEC states is included on the disc alongside 19 other countries.

According to Philips: "A straightforward user interface makes the disc easy to access and no intructions are necessary." Users can source information by keywords or by the contents.

The guide costs £130 with regular six monthly upgrades, or a straight one-off disc offer with no upgrades will cost £95.

For more information call 0306 75777. ■



Commanding guide to keys

Keyboard Guidecards, a new memory aide for PC users, are now available. The cards are compatible with Microsoft Word 5.5, Windows 3, Norton V5 and Wordstar Professional.

The guidecards are compatible with all keyboard types and provide an immediate source of reference to the commands and keystrokes needed to take the keyboard short cuts used by the software.

The complexity of the software application in use determines the amount of data needed on the card. This means that while most programs will be happy with a single Guidecard, some require two.

A holder, complete with an MS-DOS card, is supplied and can be attached to any keyboard or can stand freely on the desk.

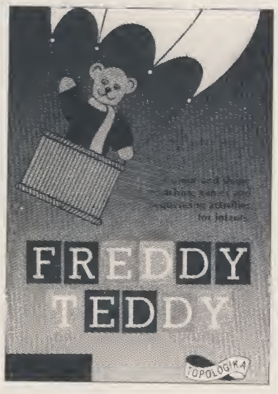
Guidecards cost £7.99 for single cards and £12.99 for doubles. For more information call to CDL on 0483 756813 ■

Logikal learning

Young children can have fun while they learn with the latest releases from software house, Topologika.

Among the titles in the company's new catalogue is *Freddy Teddy's Adventure* for the Acorn Archimedes and A3000 which helps develop counting skills and includes a colour book in the package.

Astro, for the BBC, Compact, Archimedes, A3000 and Nimbus concentates on all things astronomical. Both *Astro* and *Freddy Teddy's Adventure* cost £19.95.



For the more mathematicallly minded there is the Giant Killer Support Disk (£15.22) designed to accompany the original maths program and provide more difficult puzzles in graphical form.

Contact Topologika on 0733 244682. ■

As Apple launches its new low-cost printers, Express asks...

IS THIS THE CLASSIC BUSINESS PACKAGE ?

October 1990 saw the arrival of the machines which UK computer users had been waiting to see; the low cost Apple Macintoshes. The Mac Classic, the Mac LC and the Mac IIsi hit the UK and world markets amidst a heap of media hype and public expectation. The 'oohing' and 'aahing' went on until well after Christmas, with those people who had never seen a Mac being carried along by the wave of enthusiasm created by both the press and the folk who had used the older machines at work.

Certainly the Classic at £1,030, with 20Mb hard drive, 2Mb of RAM and a single 1.44Mb SuperDrive floppy is an ideal wordsmith's tool. It has been called a kind of extreme high-end PCW, mainly because of its user-friendliness. But unlike the PCW bundle, the Classic, LC and IIsi came without any way of outputting the text so lovingly created. It is untrue to say that there was no way at all of printing out. Apple LaserWriters, in the form of the IINT and the NTX, come in at £3,565 and £4,140 respectively. Lower down the scale comes the Personal LaserWriter range starting at £1,564 for the SC, with the NT in at £3,565. All of these machines, however, make the £1,030 price tag on the Mac Classic look a little pointless. The only real low cost option prior to the arrival of the new printers was the ImageWriter II. This dot-matrix machine came with the Apple name and company support but not with the quality of printed output which the computer and its new users demanded.

Apple, it seemed, had lost the impetus which the Classic and its low cost compatriots had so readily instigated. People were caught in two minds about whether to go for a 386 running Windows or move Macwards. Why was this? Why were people prepared to use a PC with a DMP (dot matrix printer) but not a Mac? This was a major hurdle which needed to be cleared before the Mac bundle could really take the home-users world by storm.

BARRIER RELIEF

The main reason is personal rather than financial. A strange psychological barrier had to be overcome in order for a Mac bundle to make it big outside the professional environment.

The barrier did not, and does not, involve the idea that the Mac is a poor machine. Far from it – it's quality of manufacture is undoubted. The notion that it is too technical for the home user is also fallacious; the friendly front end, devoid of command lines, root directories and complex syntax is almost legendary in its ease of use. Even the Apple bugbear of high price had been blown away, at least as far as the computer was concerned.

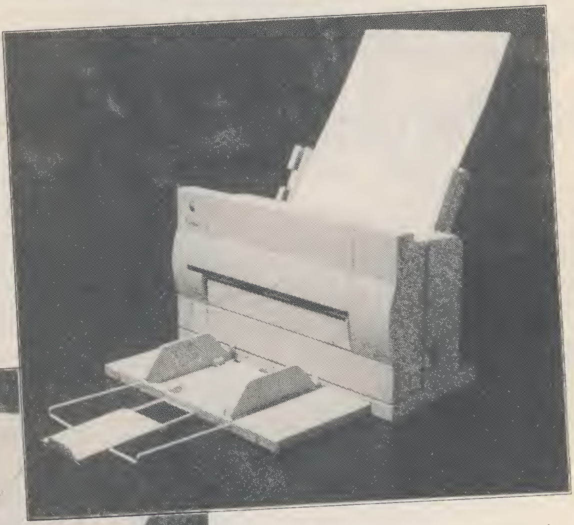
A ROLLER WITH DICE

The problem lay in the notion that, for some inexplicable reason, you cannot use Macintosh computers with dot matrix printers. This idea has less credence in the United States where the Mac is a normal, everyday computer available at college stores and computer shops. However the UK user still views the idea of a Mac with a loud, slow DMP as being akin to running a Rolls Royce car with plastic covers on the seats and furry dice in the window – it doesn't actually affect the performance, it just seems wrong.

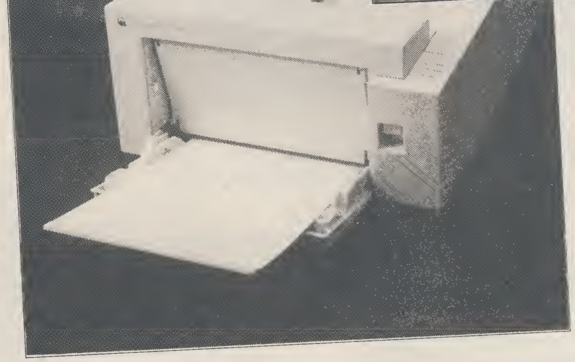
While many UK users are quite prepared to go for DMP output, and after all 24-pin dot matrix printers do offer a reasonable quality of output, as long as the computer driving the printer is a PC. Macs go with laser printers, or bubble jets. A popular consciousness was in place which seemed to have consigned the Macintosh to a high-end ghetto. Apple only had one option.

The only way out was to meet the challenge head on and bring the public the machines which it appeared to want. So why did Apple take so long before making the ideal bundle of low cost Mac and cheap, high quality laser and bubble-jet printer available?

In some camps this was seen as a deliberate ploy. Get the machines out there and then really make the money out of the peripherals. Other people thought that Apple Computer was in fact carrying out a straightforward piece of marketing; make sure that the cheap Macs sold before committing yourself to a undercutting current peripheral stock. A third, and probably more important reason, was the PostScript question.



• Above: The StyleWriter, the bubble jet printer which gives low-cost high quality printing to the mass of Mac users.



• Pictured left is the ImageWriter. Low cost laser quality which really will give 386PCs, running Windows 3 a run for their money.

The two new printers – the Personal LaserWriter LS, a laser printer which will cost around £920, and the StyleWriter, Apple's first venture into bubblejet technology, to be available for £345 or less – make use of the new 'standard' of TrueType. The underlying story to this being nearly as interesting as the fact that it enables users to output high-quality text without the need for PostScript. Apple had been paying out large sums of money on every PostScript compatible printer it sold. This cost was obviously being passed on to the end-user. There were two ways around this problem; either Apple bought PostScript lock, stock and barrel in order to leven the cost overheads, or it helped develop its own typographical standard. The first option was a non-starter, PostScript is too popular across many machine bases. The second option, however, presented an excellent upside for low cost printers which were aimed at business and home users with no requirements to output PostScript compatible graphics such as EPS (Encapsulated PostScript) files.

Using TrueType allowed the printing engine to be taken from the printer itself – PostScript printers require PostScript interpreters and that's what Apple had been paying through the nose for. Secondly, Apple was not paying out to third parties (PostScript again). This point allows for lower costs and cheaper prices to the end-user. Bearing in mind that font prices between the two systems differ only slightly and that most people who buy a Classic will be happy with the four bundled faces, and you have a problem solved both for Apple and the end-user.

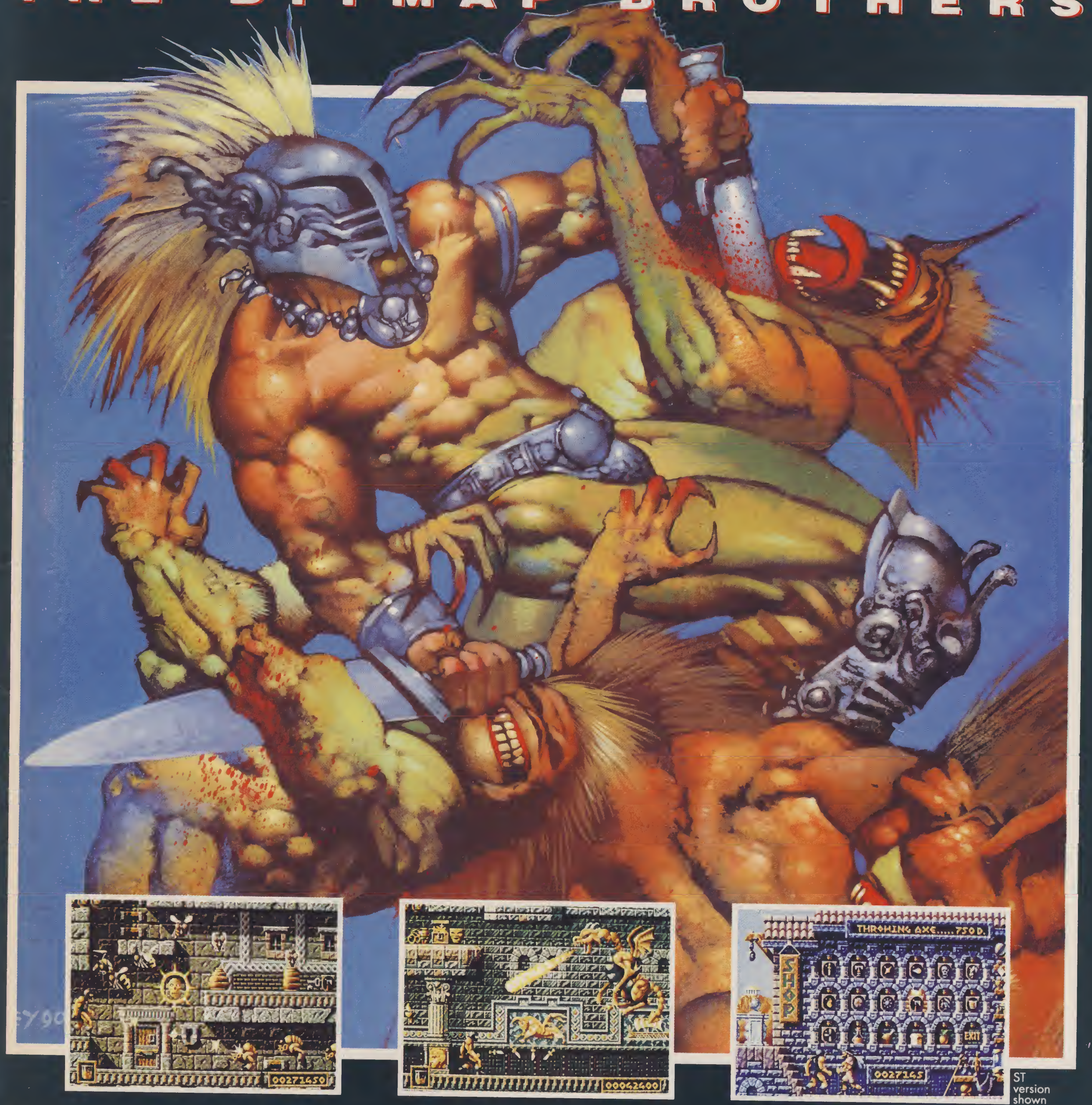
A final point in the race to produce a decent and affordable Mac printer is the looming presence of System 7, the upgraded Mac operating system. By developing new standards, and consequently retaining a hold on the peripherals market, Macintosh has made sure that it, and its tied developers, can do with System 7 as they wish. The market will be lead by the company rather than the other way around.

JOB DONE?

So, two major problems stood in the way of the affordable Macintosh bundle: psychological and financial. Both were intertwined and both have been solved quite neatly with the new printers. The psychological barrier has been shattered by the fact that Apple-badged high-quality, non-dot matrix printers are about to become widely available. The financial problem has been overcome by the fact that Apple has cut its own overheads by moving away from PostScript and into TrueType. All that remains to be seen is whether the Windows threat (Windows will also make use of TrueType) can be overcome, and just how many units Apple will move in the next year. ■

GODS

THE BITMAP BROTHERS



ST version shown

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Amiga, ST, PC

The BITMAP BROTHERS

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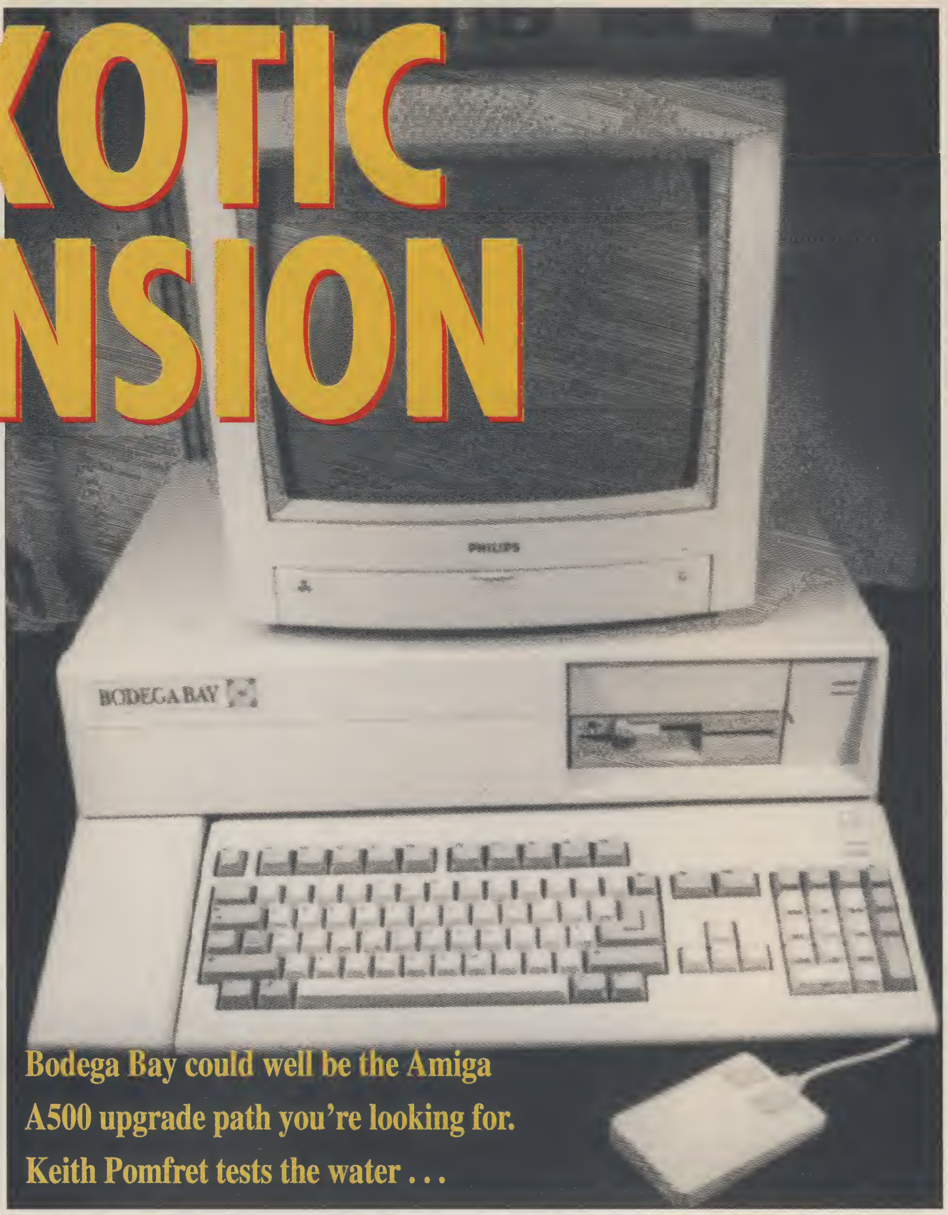
AN EXOTIC EXPANSION



Bodega Bay could well be the Amiga A500 upgrade path you're looking for. Keith Pomfret tests the water . . .

Bodega Bay sounds like an exotic location to hold a press conference, but my hopes were dashed when I found out that it was a product, not a place. Its manual describes it as a modular expansion console for the Amiga 500 and it offers A500 owners an opportunity to upgrade to a 1500/2000 like specification by connecting to the expansion slot and providing a card cage and expansion bay.

Bodega Bay does away with the need to power your Amiga from the somewhat quirky Commodore power supply and its own internal 200 watt lump takes over that job. This way, the power switch turns on the A500 too. With an optional extra cable, the monitor can be powered making the entire system a single switch turn on operation.

The Bodega Bay comes equipped with a mains cable, power cable and manual. The manual has a simple illustrated approach to installation and use, offering the experienced user a quick walk through while the less confident get a detailed description.

To connect the Amiga to the Bodega Bay is child's play with the Amiga sliding sideways under the Bodega Bay and connecting via the expansion port. Once in place the Amiga and Bodega Bay make a solid looking 'complete PC' style console.

The connection via the A500's expansion slot means that no more A500 specific add ons can be connected at the side, but that small drawback is more than made up for in the PC and B2000 expansion capabilities that the card cage in Bodega offers.

It's possible to plug the Bodega Bay straight into the A500 and go, but most people will want it for expansion possibilities so it's probably a good idea to have a dig around inside and add any immediate expansion you are planning.

We had a collection of boards to try, so off came the lid. The manual offered sound advice not to open things up with the power on or indeed power up before the physical installation of all planned devices had been done. Four cross headed screws at the rear secured the cover and with them removed, the large cream plastic cover slid off forward. This revealed the internal cage with its mounting places for cards and additional drives.

The mounting bays are for 5.25-inch drives and one was already fitted in the review machine. It is possible to fit 3.5-inch drives with optional adapter plates. A bay is included to hold a 3.5-inch hard drive and card slots for Amiga and PC cards are included. There are four 100-pin Amiga expansion slots and three of those can have optional PC XT/AT 98-pin slots.

A section in the manual explains which slots take priority and offers advice as to the optimum way to install various forms of expansion. For those adding a PC Bridgeboard in order to take advantage of PC compatibility, there is a section explaining its position in relation to other Amiga cards and how incompatibility may cause malfunction if things aren't in the right order.

Further instructions on the addition of floppy drives and various controller cards complete the installation section.

All of the cards that we were able to try worked with the exception of a PC Fax/Modem/Answering machine card, but then again that's difficult to get running on some PCs.

So far, the boards that we know will work are XT bridgeboards, AT bridgeboards, hard disk controller card (HC2+), Harlequin framebuffer, AMAX 2+, serial cards and RAM expansions.

In theory, any card that follows specific operating system and programming guidelines should work, but there may be problems with PC cards that take hardware short cuts.

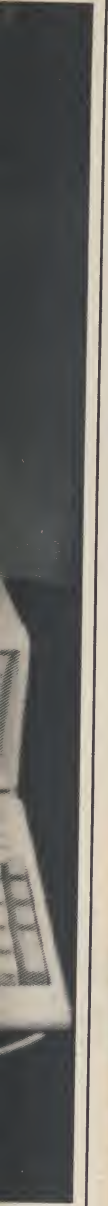
The review sample that we tested was very much a pre-production model for the UK market and although the general build quality was good, there were a few irritating things that we felt needed addressing. These were simple things such as a cable was a tad (15mm) too short. Amiga Centre provided us with a list of things that were earmarked for correction on the production UK versions and its list matched ours perfectly. We will be grabbing one of the first production models to check that these quirks have been remedied, though!

In general, Bodega Bay was easy to use, the instructions were clear and concise and the procedure for installation and expansion were more than adequate. The design is a bit lumpy and once in place, the big cream box with an A500 poking its nose out from underneath was reminiscent of a card punch console or a teleprinter. It's a love or hate design. It makes a mockery of the 'small footprint' trend with demands for large amounts of desk space. If you need to rack mount your kit then this isn't the box for you. But if you're happy with a big sturdy expansion system that will take a 40 pound monitor then Bodega Bay is for you.

It did all that US manufacturer California Access claimed and more. Running with cards inside, the space available offered adequate convection and there were none of the overheating problems that have been experienced with teeny PCs. If expansion is your path and you want to retain your A500, Bodega Bay is an option that must be considered. ■

FACTS

Bodega Bay is available from Amiga Centre, Scotland. At the time of going to press, it hadn't fixed a firm price for it as Bodega Bay is only now arriving from California. A rough estimate from Amiga Centre was that it would cost around £350 for the base unit. With an XT bridgeboard and a colour monitor, that would bring the price to slightly under £1,000 making it on a par with the Commodore Amiga 1500 for price and an option to trading in a 500 to upgrade. Amiga Centre Scotland is on 031 557 4242.



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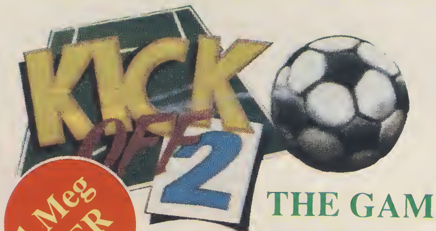

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■ DIPswitch romances

As to why DIPswitches are put in the most inaccessible places – it's a tradition going back to the days when only businesses could afford printers. Putting DIP switches in secret little places means that an engineer had to be called in every time the printer was to be used with a different computer. No business would be too chuffed to receive a large bill from a computer maintenance firm if it was observed that the engineer came in and merely flicked a switch to solve the problem, so DIP switches were originally built into printers in such as way as to give the Impression that the problem was complex – and deserving of a whacking great bill.

It also probably Impressed young female office workers of the 'Philadelphia Cheese' variety and no doubt did the engineers a lot of good romance-wise too.

However, one day an engineer revealed all (*to one of the Philly girls, presumably? – H F-W)* He was of course instantly blackballed throughout the industry, and was last heard of putting labels on 3.5-inch disks and putting them into wallets. After that revelation, printer manufacturers put DIP switches mainly on the outside of machines, but still observe tradition by making them inaccessible in the hope that the old mystique – and business – will return.

Why else should they do this when a software solution that could autoconfigure printers to a particular machine Is perfectly possible?

D Griffith, Shepherds Bush

■ Amiga defender

Strange how people seem to get more vitriolic about the Amiga as its gets more and more successful, Isn't it? John Goldsmith's letter in *Express* 121 was a typical instance.

1) True, the Workbench does take over a minute to set itself up, but to be more accurate, the Workbench is mostly in ROM and loads in under a second, typically. The rest of the time is used by the system setup routines which are fully user-customisable. Read my book John (plug plug) if you need an example of Workbench loading in just a few seconds.

Workbench disks are slow to open because the system has to load and display dozens of different icon Images.

2) AmigaBASIC is truly awful – you're quite right there. But there are plenty of other ones: GFA 3 and AMOS for instance. Atari's BASICs for the 400/800 and ST, and Commodore's 64 BASIC to name but three others are all as weak as AmigaBASIC.

3) The odd one out was BBC BASIC. Any programmer will tell you, it's much easier to reference cartesian Y from the top of the screen – Inverting it only slows things down.

4) What awful flickering mess? Surely you don't mean cracked and packed pirate copies?

5) Whadaya want? One minute you complain about flickering screens, and the next you want 'game loading' information. Strewth!

6) The Amiga doesn't crash – the software does. If your PD games hit the ROMs then it'll crash just as quick as an ST would, given the same treatment.

Mark Smiddy, Orion Computer Services, Cleveland

Yup – I was right. I thought that letter from Mr Goldsmith would rattle the bars of a few cages...

H F-W

■ 'Apalled' of Bootle

I am apalled at your reply to A Sharp's letter (*Express* 121). You agreed that the 'sampled soundtracks, snatches of music and film clips are all the property of the copyright holder', but the fact that no-one has been prosecuted for taking these samples and clips does not, by any means make it a legal practice.

Then you go on to say that the material in such demos is not pirated for commercial gain and probably serves to promote the original work. Does this mean that I can now buy software, CDs and LPs, record part of them and freely distribute to friends? Of course not.

You seem to condone this thin end of the piracy wedge. If you think I have an axe to grind, you're right – I have. Since buying my Amiga I have refused offers of hundreds of pirated disks for free from fellow Amiga owners. Being unemployed, it is a great temptation to justify taking such free disks. Don't get me wrong – I'm not 'Mr Honesty', but I am concerned that many software programmers will get sick of people ripping off their work, and leave the Amiga to program consoles in the future.

Your comments surprised me. Is it now the case that *Express* condemns only large-scale piracy and lets these 'mini-pirates' off the hook? It makes me wonder if my personal anti-piracy stance is worth the trouble.

C Robinson, Bootle, Merseyside

I'd like you to go back to your copy of *Express* 121 and read that letter and my reply to it once more, Mr R. It may be my fault, or it may be yours – but you seem to have got the wrong end of the stick.

I was trying to point out the difference between pirating games wholesale or taping an entire album, and taking short samples from a copyright work. If you accept a pirate copy of a game or a cassette that contains a complete LP, then you are depriving the copyright holder of the income due from a sale, and doing real damage to the artist who created the work.

If, however, you get to see a short film clip, listen to a few sampled bars of a song from an album – or get a one or two level demo from a game, then you are likely to have your appetite whetted for the full product – such extracts can act as samplers, and may lead to increased sales of the complete work.

Which might be why the massive corporations that own the copyright in films, videos and music don't bother to take action against the people who sample their works and use them in demos. In effect, they are getting free advertising. If bootleg albums or complete copies of films were being circulated on videos, then you can be sure that the copyright holders would want to come down hard on the pirates. And as I said, some cunning software publishers have, in the past, deliberately leaked significant chunks of their games onto the pirate circuit to take advantage of this free advertising.

Your personal stance against piracy is admirable. It is harder to turn down the offer of 'free' games when you are on a low income and there are plenty of very well paid people who have libraries of pirated software. If more people took the approach to life that you do, software prices might well be lower.

As it is, piracy is forcing some software houses to think very seriously about the future of magnetic media – indeed I heard that one software house plans to complete all its current projects for disk and tape and then move over to cartridges, abandoning cassette and disk software for ever. This is not good news for the average computer owner – but then the average computer owner only has himself (or herself) to blame...

H F-W

■ Money man

I still can't believe that G Smith thinks that all the letters you print are paid for. Generally speaking, if a magazine doesn't say 'every letter printed here wins a fiver',

then this isn't the case. *Express* isn't the creator of the 'Star Letter' concept, and it hasn't caused confusion in other mags.

If Mr Smith wants to get paid for writing, perhaps he should send in a serious piece of journalism to your magazine (if you accept freelance work from anyone). I have never heard of a letters page being a cheap way of filling pages – and I think you were very sporting in awarding a fiver to this person after he was so rude about you personally and about the magazine which I have read since Issue one. I've had two letters printed before, and have never sent you an invoice1

Tim Gowen, Diss, Norfolk

Well thanks for coming out so firmly on my side on the Great Payment Debate, Tim. I'm sure you'll understand that if I were to award you a fiver I could be accused of bribery!

Anyway, the position should now be well and truly clear – I only give fivers away when I feel a letter merits a few quid. By the way, we certainly do accept and pay for freelance articles – but generally only from a pool of established writers.

Any readers with an idea for an article should send a synopsis to our editor, preferably with some samples of their writing and a daytime telephone number – and there are more than fivers on offer!

H F-W

■ Technically speaking

In *Express* 119 you published two erroneous 'facts' about CPU bus widths. The first is Tim Smith's Centrefold contention that a 16-bit data bus allows you to address 64Kb of data. In fact, you can address all the data you like with a 16-bit data bus, provided your address bus is wide enough – it is the number of bits on the address bus that governs how much memory may be directly accessed. 8088/8086 PCs have a 20-bit address bus, while 80286 ATs have a 24-bit bus. I guess Tim doesn't know there is a difference between address and data buses, but since he's so clever in um... some other way, he will no doubt be forgiven.

The second mistake is in the chip comparison article and chart on page 62 and 63, where the 8086 is listed as having an external data bus of eight bits. It is the 8088 which has only eight data lines to the outside world – the 8086 actually has 16, though it may often be the case that only eight are used, since the standard IBM PC bus itself only supports eight.

The notable exceptions to this are the Amstrad PCs, which (in direct contradiction to Stuart Anderton's statement) use all 16 of the 8086 data lines, and have 16-bit data flow between the CPU and the main on-board memory, allowing word-size data to be moved in one read/write cycle instead of two. Unfortunately, the limitations of the IBM PC expansion bus prevent this being extended to plug in cards.

Iolo Davidson, Tetbury, Gloucs

Cheers Iolo. Once again you contribute to the knowledge of *Express* readers (and writers). Ever thought of getting in touch with the Ed and arranging to do so on a more regular (and more financially rewarding) basis?

H F-W

■ Caveat prize winner

Flicking through an old edition of *Express* (Issue 103) I came across 'The Week In View' by Robert Stallibrass of Active Consoles.

The article weighs up the pros and cons of buying from a specialist shop or a high street electrical outlet. One would assume from the article that Mr Stallibrass favours the specialist shop which is akin to his own firm, but are they all they are cracked up to be?

I won a competition (expect cries of 'whinging bastard, what does he want for nothing') run by *Express* and Active for which the prize was a Powercade arcade cabinet, a monitor and an *R-Type* PCB. As *R-Type* is my all-time fave arcade game, you can imagine my delight when I opened the letter on 13 October 1990 to find that I'd won. I contacted Active a few days later, and after congratulating me, they told me that my prize would arrive that week. After re-arranging the furniture in the house to accommodate the prize, I sat and waited.

Needless to say, it didn't arrive. After four more promises – causing me a lot of earache from my wife who had to stay at home all day on the off-chance that it arrived – it turned up on 9 November. I rushed home and there it was: the Powercade, but alas no monitor and no PCB for the *R-Type* game.

I rang Active and was promised them the following week – and they finally arrived on 21 December. What a great Christmas present! I left work early and rushed home to set it up. Got it all ready, only to find that the lead from the cabinet won't fit the monitor – rush to Tandy for a connector, told 'no chance'.

I rang Active after the Christmas break to find they know I have the wrong monitor and are trying to find a replacement. 'It's all about expertise', says Mr S in his article.

I've left out details of all the fruitless calls I made to Active, including trying to talk to Mr Stallibrass – and I know that Tim Smith has been ringing them on my behalf too. It's now four-and-a-half months since I was originally promised the prize, and I seem to be banging my head against the proverbial brick wall. My next step seems to be to employ a solicitor.

To finish off, I'll quote Mr S again: "The moral of the story is 'Buyer Beware'"

Graeme Haddlesey, Osset, W Yorks

A veritable tale of woe Mr H – and one in which our illustrious publisher no less has already intervened.

The first part of the delay seems to have been caused by the fact that R-Type PCBs suddenly became very scarce, and Active says it was taken by surprise when the manufacturer of the monitor changed specs suddenly.

But the fact remains that the prize should have been ready and waiting for the winner when it was offered – I'll add my apologies and try and work some personal magic.

H F-W

MAIL SHORTS

■ MCIOTVMTYC

It's the 'My Computer Is On TV More Than Your Computer' debate again. Did anybody notice the Archimedes on *The Mary Whitehouse Experience* weeks and weeks ago in their sketch making fun of role-playing games? I'd know those ventilation slits anywhere. There was another Arc on the *Antenna* programme on BBC2 about fractal geometry, and there are loads of Archimedes in *Capital City*. And the one used during the Royal Institution Christmas Lectures.

Chris Eason, Leamington Spa

You collect a fiver for your multiple mention. And that's the way 'Seen On Screen' works from now on – money only paid out for new and multiple mentions!

H F-W

■ Seeking Tracy

You mentioned a mouse add-on called Tracy by a company called Sidewise some weeks ago, and I have been searching for it ever since but to no avail. Could you help by giving me an address from which it can be obtained?

G Smith, Dartford, Kent

Only too pleased to oblige. Write to Sidewise at PO Box 4 Totnes, Devon TQ9 7EN.

H F-W

■ Joystick shopper

Looking for another joystick, I came across one in the Argos Catalogue – page 329 Item 10 Cat No 535/3934 Euromax @ £9.99

This has now been substituted for Flashfire, New model Superspeedy at the same price. It is robust, has everything, why pay more?

L O Rigby-Jones, Worthing, Sussex

Quite. But I don't really understand why you are telling me this...

H F-W

■ Archie PD appeal

If anyone knows of or runs an Archimedes PD library, could they get in touch with me?

Andrew Clarke, 1 Bluebell Meadows,
Newton Aycliffe, Co Durham DL5 7LY

Drop a line to Eureka software – Chris Eason, C/o Mrs D Butcher, Freeman Hall, The Trinity School, Guys Cliffe Avenue, Leamington Spa CV32 6NB. They're not a PD library, but have some interesting schoolwork-related software for sale at a good price.

H F-W

■ Stoke-on-Trent man attempts world's most untidy living room

I am sending this photo in the hope that you can settle and argument that has been raging in our house for some months as to the arrangement of my computers in the front room.

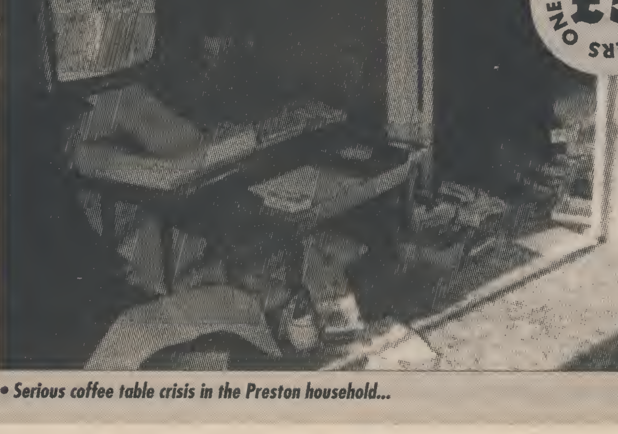
My wife says they are untidy and I say it is a perfectly normal arrangement. Can you confirm this for me? Besides, we have now run out of coffee tables.

J Preston, Tunstall, Stoke-on-Trent

I think your wife has a very valid point, so I'm going to send her a fiver. Close scrutiny of your pic reveals that it would be impossible to shut the door!

You seem to have a normal set-up, similar to computer owners worldwide, but not in the front room.

H F-W



• *Serious coffee table crisis in the Preston household...*

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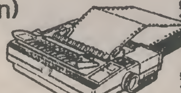

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Macintosh

PRINTER JOY

Well, here they are then. Although there have been rumours flying around for the last few months about exactly what form the new printers from Apple would take, there were still some surprises when they were finally revealed.

So, who will be buying the new machines? Well, essentially anyone who doesn't need PostScript output. If you own *Adobe Type Manager* for any PostScript fonts which you have, and make a habit of buying TrueType fonts in the future, you will have a top-quality output device for a fraction of the price of a PostScript machine.

The new machines will be superb for those of us who want high quality without the cost. Expect to see thousands of TrueType fonts appearing at reasonable prices in the near future.

CHEAP LCS

If you're involved in education and you meet Apple's criteria, you could qualify for a Mac LC at a special low price – but only if you apply before the end of March. Until then, you could get a 2Mb LC with 40Mb hard disk and 12-inch colour monitor for £1,085 plus VAT. The same configuration with a monochrome monitor costs just £985 plus VAT.

Get in touch with your local AppleCentre for more details if you think that you might qualify for the discount.

RUMOURS...

After reading this column a couple of weeks ago, Apple's PR agency rang us to let us know that the Mac appears on the TV programmes *Spender*, *Lovejoy* and *Boon*. So there.

Not quite so trivial, System 7.0 is now being slated for release on May 13, the first day of Apple's Worldwide Developers' Conference. Although not officially confirmed by Apple, sources 'close to the company' are quoting this date. Expect to see versions available to the public about two or three weeks after that. Final Beta versions are now shipping to developers; with a bit of luck I'll be seeing one within the next couple of weeks, and will be able to give you some first-hand info about the improvements that it offers.

Rumours are beginning to circulate that sometime this year Apple will introduce a version of the Mac Classic with a 68030 chip replacing the current 68000 processor. This will increase its speed to about the same as the IIsi or IIcx, and will probably result in a slight reduction in the prices of those Macs. But don't hold your breath – it's likely to be the end of the year before the 'SuperClassic' appears, and it certainly won't replace the present Classic.

The Mac LC doesn't seem to be selling as well as Apple had hoped. Insiders feel that perhaps it hasn't been marketed with as much vigour as the other two new models – it falls in the halfway house of not being a member of the Mac II family, but not being a 'non-modular Mac' like the Classic either. Expect a heavy advertising campaign to raise consumer interest in the LC in the near future.

Newsbytes, the on-line information service, reveals that at a recent conference in Japan, Apple Chairman John Sculley was overheard to say that Apple is "discussing" sharing Macintosh technology with other companies. This would include the Mac operating system, and the Mac's GUI.

At the same conference, referring to the release of Windows 3, Sculley said that: "So far there is no damage to the sales of the Macintosh. On the

POSTCARD FROM AMERICA

The reverberations of the MacWorld Expo are still bouncing around the San Francisco Bay Area. The recovery of many late night party animals is still in question. Early some mornings, with a foghorn blasting in our bedroom window, I endure a flashback of the amazing *MacWeek* magazine "Mac the Knife" party. Mac the Knife is its primary rumour monger.

This was no ordinary run-of-the-mill software hype mixer, held in a nearby hotel suite, with some bowls of pretzels, crusty canapes, and free beer. This was the absolute must-attend Macsocial event of the season.

It was held in the top floor of DV8 (deviate), a terribly chic nightclub housed under a downtown freeway. Eager MacWorldies started lining up around 11pm, hard-won tickets in hands. The bouncers passed the multi-millionaire developers straight through the doors, ahead of the crowd. The rest of us crawled up three flights of stairs after a long wait in the cold.

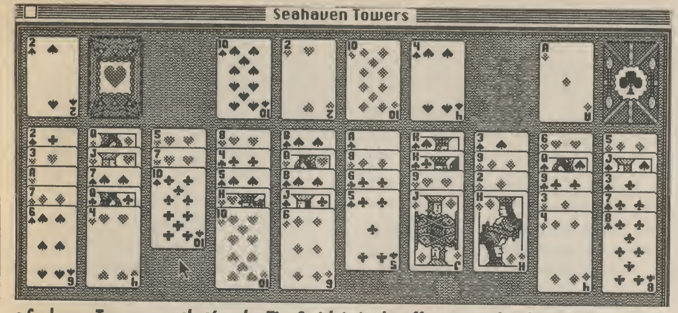
Inside was a scene that few Mac-nerds have ever experienced. Loud. Dark. Smoke. Louder. Grilled shark tacos. Laser light show. I was deafened.

I've never been able to understand why, at parties at which everyone wants to see and be seen, all the lights are out? It's also difficult to impress that special contact when everyone is effectively deaf. This crowd was not going to win any dance contest, either.

The overflow party hopefuls were let into the "real" disco below, decorated with immense Keith Haring murals . This was where the action was hot! Beautiful young guys and gals, terrific clothes (or lack of the same), and the latest dances. I tried to persuade some buddies of their good fortune in being stuck in the disco. Most trendy clubs exclude the nerdish set with selective entrance policies.

A very small tip: Is your mouse jumping and skipping around your desktop? This is one of the effects of the WDEF virus, so use your anti-viral software to check your hard drive. More likely it's a down to earth problem – a dirty mouse. Pop out the mouse ball and clean the three rollers inside. If that doesn't do the trick, try pushing in the ADB plug firmly into the keyboard. That should stop any cursor cursing.

David Morgenstern



• *Seahaven Towers: so that's why Tim Smith is in the office at weekends!*

contrary, Windows 3 has drawn attention to a graphic user interface and, as a result, it has stimulated the sales of the Macintosh."

Following on from the NuTek Mac clone story I told you about a couple of weeks back, Cork Computer, a US-based company, has apparently said that it expects to ship a $2,999 Mac IIci clone on March 25. This clone will only require a 128K ROM from a monochrome Mac, which will plug into the clone's main logic board. The company has developed colour ROM chips which will provide the same functionality as 32-bit *QuickDraw* without infringing Apple's copyright. Watch this space for details...

CARD SHARP

For the past few weeks, work at Future Towers has been reduced to a crawl by the invasion of a shareware game called *Seahaven Towers.* It's not brand new, but for some reason it's only just appeared in the office.

Seahaven Towers is a variation on Patience or Solitaire, and it's highly addictive. It's also extremely difficult (Tim 'Smith' Smith has just spent three days completing one game), and it has that 'well, just one more game' feature with a vengeance. The shareware fee is $20, and, as usual, it's available from on-line services such as CIX as well as most PD and shareware distributors.

Ian Wrigley

PC

CHIP'S CHALLENGE

Chip is tall, lanky, bespectacled and... a nerd. Sad, but true. Chips possesses all the social and sartorial elegance of your average trainspotter. All this would be bad enough – but he also happens to be head-over-heels in love with the gorgeous Melinda of the Bit Busters computer club.

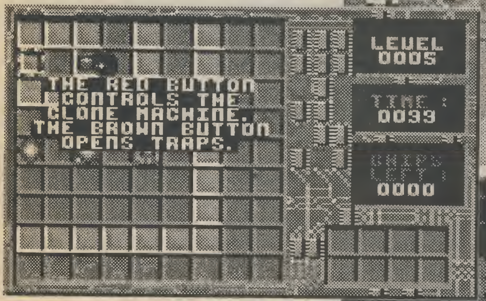
Chip has one chance. If he can find his way through 144 levels of puzzles, collecting some missing microchips along the way, he can join the Bit Busters, and maybe even capture the heart of Melinda too.

Chip's Challenge is a long way from US Gold's usual arcade conversion territory, concentrating on traditional seen-from-above puzzling screens, rather than scrolling and blasting mayhem. Each level comprises a variety of traps, monsters, puzzles and useful objects. Keep a lookout for things like the cleats, which let you walk across ice, and keys to get you through locked doors. You can also push various blocks around, too, to help you cross gaps – or maybe you'll discover something interesting underneath...

The levels differ considerably in size – the first is a tiny 'training' level – and you only see a portion of each on-screen at any one time. This really is a very big game. Fortunately, each level comes with its own password, so you don't have to play through the easier early levels every time you load the game up.

The scoring is a bit strange – there isn't any! Neither do you have a set number of lives. Instead, this game is simply about progress. If you 'die' you simply start again on that level. Since most people are only interested in progress anyway, this successfully

• *This is the character you play in Chip's Challenge. Grim isn't it?*


THE RED BUTTON CONTROLS THE CLONE MACHINE. THE BROWN BUTTON OPENS TRAPS.
LEVEL 0005
TIME 0039
CHIPS 0000

• *Level Five, and a rather handy bit of advice for Chip...*

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removes one of the most frustrating elements of most puzzle games.

The graphics are OK, but rather on the blocky side, one of the disadvantages of small characters and lots of colour. Also, the screen scrolling can be decidedly sluggish, especially on the more complicated levels. That said, the slow speed doesn't interfere with the game too much, since most of it is about solving puzzles anyway.

It makes a welcome change to see US Gold trying out something a bit different especially when the result is as good as this.

F-16 FLIES NEARER

Digital Integration has been pretty quiet on the CPC front over the last couple of years, but all that's about to change with the imminent release of *F-16 Combat Pilot*.

So far I have only seen it running briefly – and then in the hands of an experienced DI 'pilot' – but it looked smooth, fast and rather good; the static screens are especially impressive.

Also coming up on the games front is *Turrican II* from Rainbow Arts. The original was the classic shoot-'em-up of 1990, featuring fast action, lots of baddies, ultra-tough gameplay and generally remorseless violence.

Frankly, it's hard to imagine Rainbow Arts improving on it, but I look forward to the sequel all the same. So far, only a rolling demo has been completed, but it looks like it might well be capable of upstaging the original.

464 VS 6128, THE OTHER ARGUMENT

The sad fact is that 6128 owners tend to regard the 464 as a poor cousin. The tape-based machine seems to act as a kind of lowest common denominator, its inferior memory meaning that the majority of commercial applications (games, principally) aren't designed to exploit the greater capabilities of the 6128. Wouldn't it be wonderful if Amstrad phased out these 64K tape-based machines, leaving software houses free to cater exclusively for their 128K big brothers...?

Well, A Sugar (it's true, I tell you) of Glasgow has some other, rather interesting, ideas:

"Firstly, budget computer games would die a sad death on the abolition of cassettes. For many young computer fans like myself, who own cassette machines, and whose only means of buying software is weekly pocket money (I get £4 myself), this would mean an end, basically, to buying games. And the action of recoding from tape to disk does not offer any consolation.

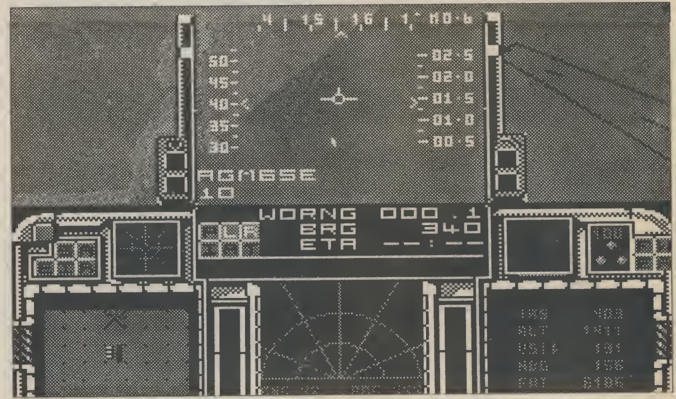
"Consoles, being devoted to games, may provide stunning graphics, but at £20-30 a throw for software are they worth it? I think not, when you compare that to £2.99 for much the same game on cassette. I know console graphics are heavenly, but when you think about it, the Amstrad graphics aren't altogether hell-bound either. Anyway, it depends on the game.

"Also, surely the variety of games on offer on disk is limited? With cassettes, my eyes gaze lovingly at row upon row of neat, rectangular budgets bargains while I might find the odd disk game dotted here and there."

Certainly, the budget market is much underestimated. Just because full-price games have the highest profile, it doesn't mean they sell the most.

Also, Amstrad's relaunch of the CPC series has had some interesting and subtle effects. The 464 Plus is much less the poor cousin in the gaming world that it once was. After all, it can now play the entire range of games on sale, from budget £2.99 offerings through full-pricetape-based games and even console games. In contrast, the new 6128 Plus is 'comparatively' limited in the games that can be played on it – how do you load budget games on a machine with no tape port?

Rod Lawton



• ***F-16 Combat Pilot* for the CPC takes to the air real soon.**

Amiga

CARTRIDGE

Many of you may have noticed that Datel Electronics has produced an Amiga 2000 version of its highly regarded Action Replay Mk II utility cartridge. It simply plugs into the processor slot on the 2000 and contains exactly the same features as the Amiga 500 version.

A word of warning though – it seems that the card is only compatible with 2000's that have a minimal amount of expansion hardware installed.

My 2000 has 9Mb of RAM (1Mb of chip RAM) and a hard drive installed, so I was rather annoyed when I received my Action Replay card, only to find that it did not work. So I phoned Datel's

AMIGA
ACTION REPLAY
DATEL ELECTRONICS
AMIGA ACTION REPLAY II

• Action Replay – a real dodo on the 2000?

technical support line (which is actually run by some very helpful people), only to find out that the card will only work on a 2000 with no more than 2Mb of RAM. Datel also claims that the card will only work with Commodore-produced hard drives so if you've got another make (which, let's face it, are usually better than the Commodore's own), you're stuck.

The question is, then, what's the point in producing a utility cartridge for the 2000 if it won't work on an expanded machine? People buy the 2000 because of its expansion capabilities, so it goes without saying that the vast majority have at least some form of expansion hardware fitted. OK, I'm not saying that we all have 9Mb of RAM, but I'm sure that most serious 2000 owners have at least 3Mb.

So I sent back my card and requested instead an Amiga 500 cartridge which Datel claim will also happily work with my A1000. But, surprise surprise, more disappointment – it doesn't work with the A1000 either! Oh well, looks like I'm finally going to have to take the plunge and buy an Amiga 500.

Meanwhile, there's still no sign of the promised follow up to Data Electronics' Nordic Power cartridge which was released in April of last year. When I spoke to Klaus Roregar of DE back in September of last year, he promised me that the new cartridge would be made available in a 2000 plug in card form sometime in January of this year. As we all know, January came and went without a sign of a single cartridge from the Holland-based company.

According to Klaus (perhaps he would like to contact me if he's reading this?), the cartridge was to be designed in such a way that it could be used on both an A500 and a 2000 (there are two connectors on the board).

WRITE TO REPLY

I recently received a letter from Gary Devey of Ealing in London concerning my review of the Applied Engineering High Density floppy drive which I featured a few weeks back in *Express*.

Gary wanted to know a few more details about the drive. Firstly, I forgot to mention that the drive is available Stateside for $189 (which will probably translate to approximately £140). This isn't a bad price at all when you consider that the drive will also take standard Amiga 880K floppies as well as the 1.52 Mb high density floppies.

Secondly, Gary asked whether the high density drive would function with Bitcon's KCS Power PC Emulator card for the 500 and Consultron's CrossDOS. The simple answer to this is 'yes' and 'no'. If you want to read and write high density PC floppies, then it won't work (you'll need a modified version of both CrossDOS and the KCS emulation software for this to work). If, on the other, you wish to use standard 720K PC floppies, then you won't encounter any problems.

Changing the subject slightly, Gary also wanted to know whether it is possible to connect PC hard drives to the Amiga. Well, he's in luck again. All you need is the correct controller card and you're in business. There are a large number of different controller cards available for the Amiga which will allow you to connect XT (indeed, the A590 uses an XT drive), SCSI, AT IDE, ST506, etc drives to your machine. Contact Third Coast Technologies on 0257 472444 who will almost definitely be able to help you.

It's also possible to connect up PC SHUGART floppy drives to the Amiga by constructing a very simple interface. Complete instructions on how to achieve this can be found in the latest issue of *JAM* which is available by telephoning 0895 74449.

If you're after a very cheap external floppy, then these SHUGART drives are a very good bet. Simply by scanning the advertisements in a PC magazine, you can buy a bare drive for a fraction of the cost of an Amiga drive.

Finally, Gary enquired whether there is a drive available which will work from the parallel port. The only such drives of which I am aware are the range of 'Tiny Tiger' hard drives from George Thomson Services (I'm not quite sure if they still sell them, but give them a bell just in case). These also offer 'pass-through' connectors, so you can still connect up and use video digitisers, samplers etc. GTS is on 077082 234.

A COMPLETE LEMMING?

It saddened me to read in *Express* issue 121 that Psygnosis' *Lemmings* had been 'cracked, hacked and packed' within days of its release. After all, we all complain endlessly that many of the games released for the Amiga are either totally devoid of gameplay, have appaling graphics and sound or are

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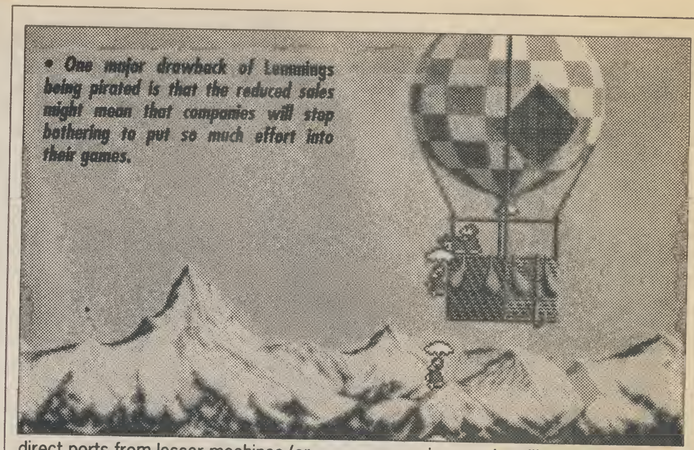


• One major drawback of Lemmings being pirated is that the reduced sales might mean that companies will stop bothering to put so much effort into their games.

direct ports from lesser machines (or even a combination of all three).

But what happens when someone finally produces something that is actually worth the £25 asking price? Some moron goes and pirates it.

I've got no sympathy whatsoever for software houses that produce naff games software (some games aren't worth 25p, let alone £25), but when a software house really puts in the effort to produce a top notch game, we owe it to them to respect that effort. By buying the product, we can demonstrate that users are prepared to pay for a quality products and hopefully this should encourage software houses to put in the extra effort to produce even more decent games (as they say, vote with your wallet).

You may well argue that price of games is too high, but that is simply no excuse for pirating games. The fact is, a game is a product like any other – just like, say, a car or a chocolate bar. The producer of that product can only afford to develop future products (a tastier chocolate bar or a new model of car) if they have made enough money from previous products.

You've heard it a million times before, but it still holds true – where software piracy is concerned, the only people that suffer in the long run are the users themselves. If companies like Psygnosis cannot recoup their costs, then they will simply stop developing products for that particular machine. Already there have been rumours that the Psygs may do just this and move across to the consoles, which would be a great loss to us all. So come on, do the sensible thing – if you already know that a game is good, then go out and buy it.

Jason Holborn

Archimedes

TELETEXT ADAPTORS

Over the couple of weeks I've been trying out two teletext adaptors, one from the well-known Morley Electronics and the other from the less well-known Ground Control. Both are separate boxes, ie they're not podules, but they do require plugging into the Archie's IIC bus via the podule backplane.

The IIC bus is a 'slow' serial connection that allows communication between all sorts of odd bits of electronics. For example, my Philips video recorder has an IIC bus connection on the back. Having this sort of connection means that these adaptors are truly 'universal'; with only an appropriate driving routine they could be plugged into BBCs, Nimbuses (Nimbi?), PCs or even Spectrums!

The Ground Control unit has a 'data' socket on the front and you must order the appropriate connection lead with the unit. The Archie lead I received is particularly pleasing with a very smart, sealed podule connector. The Morley unit, on the other hand, has a rather disappointing piece of ribbon cable emerging from one end with a podule connector soldered onto it.

Both units need separate power supplies from the Archie; Ground Control has one built in, with a big chunky on/off switch on the back of the box. Morley has a mains plug transformer which must be connected to a BBC B-style socket near the podule socket. This does mean it is a little untidy with another wire going into your Archie, but once plugged in, you soon forget about all the spaghetti at the back of your desk.

The Ground Control unit also sports an AUX socket which has composite video and audio connections. This means you can connect a suitable monitor (eg Philips CM8833) to it and watch the telly!

The final cosmetic difference is in the case. Ground Control has a strong BBC beige, steel case making it look remarkably like a Music 500, while Morley's case is plastic. This, along with the lack of internal power supply, does make it much lighter than the Ground Control unit!

Of course, nobody is really interested in the dimensions of the case; it's the supporting software you need to know about. The only problem I have at the moment is that it isn't really fair to compare the two yet. Ground Control has a full multi-tasking 'Mode 7 in a window on the desktop' application whereas Morley is a single-tasking Basic program that uses Mode 7 directly. But I have been told that a RISCOS version is in production.

So without too many comparisons, here's what you get.

GROUND CONTROL

The Ground Control software installs itself on the icon bar and will change the default Mode 12 palette if you so desire. Clicking on the icon brings up an emulated Mode 7 window (no flashing characters, though) and a numeric keypad for entering page numbers.

You'll probably need to tune the channels before starting; this is achieved by selecting 'TUNE' from the menu then manually stepping through channels 21 to 69 to find a signal. Fine tuning from –49 to 49 is also available. If you're lazy, you can also use the SEARCH facility which automatically steps through the channels until a strong signal is found.

Assuming you've set all this up correctly, channels can now be selected by pressing 'CH' followed by a channel number on the numeric keypad (I would have liked to see separate BBC1, BBC2, ITV and Channel 4 buttons). This will automatically take you to the index page.

As mentioned above, page numbers can be entered by typing the number on the keypad; you can also point to the coloured 'FasText' buttons at the bottom of the window to take you to related pages or, best of all, by simply pointing to a page number displayed in the window and clicking the mouse. This is a really simple, but very effective feature.

All the usual functions are available, such as Hold, Conceal/Reveal and page-saving. There is also a handy *!Edit*-style Notepad for jotting down page numbers. Another useful feature is the facility to customise the menu by adding four preset pages of your own choice, but you really need to be able to do more than four.

The Emulated Mode 7 screen is very nicely done, (apart from the lack of flashing characters); the character set is particularly easy to read – double height especially so – and if you try displaying the test pages on Channel 4 (Page 693) you'll see it also has a set of foreign character sets built in. Double width, smooths, mosaics and palette changing (under Extended Level 1/Level 2 teletext) are not supported.

MORLEY

The Morley software is a bit of a let down after Ground Control, but should not be dismissed as useless. It uses the Archimedes' own Mode 7 display, and so supports flashing characters. Everything is controlled via the keyboard – mainly with the function keys (a keystrip is provided). Shift f1-f4 select channels while the ordinary number keys select pages.

FasText links are supported, but there is no method of picking page numbers off the screen.

Shift f5 allows the unit to be tuned (with the cursor keys) and a readout in channel number and MHz is displayed. As there is no video output, though, it is quite tricky to find the channels.

Pages can also be saved, loaded and printed. The only real feature of the software is the ability to search for a given subpage – for example number three of seven – which you cannot do with Ground Control.

THE FINAL VERDICT

To sum up, both units do their job well. Neither is perfect, and I can think of a number of absent features which would be desirable, including auto page caching. The attention to small details makes the Ground Control adaptor the most appealing of the two at the moment and at £75 is almost half the price of the Morley which is £147.20. Maybe the Morley RISCOS software will change that, but with such a large price difference I don't think Ground Control has too much to worry about.

Ground Control can be contacted on 0702 230324 and Morley Electronics is on the other end of 091 257 6355.

Next week, a review of Superior Software's *Master Break Quiz*... Can I have a Cue please Bob?

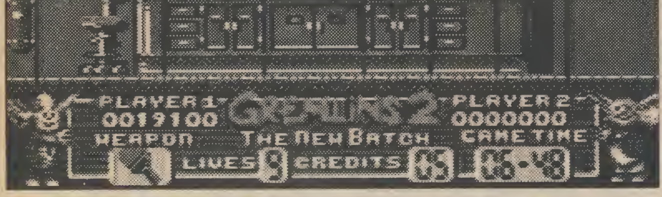
Ken Coumarin

64

AND HERE IS THE NEWS

Elite, which has been absent from the C64 software scene for some time now, has returned to the fold with *Gremlins 2*, its licensed adaptation of the film that features Gizmo, Mohawk, Electric, Skateboard, Sexygirl and more mischief than you could find in an Iraqi command and control bunker.

Graphically, the game offers a lot, especially in terms of capturing the antics of the Chinese demons as they climb out of plug sockets charged for action, run you down on resin wheels or pogo their way across the screen. Indeed eight of the most noticeable of the film's gremlins find their way into the game and though the sprites are small, they convey quite well, their chaotic big screen counterparts.



• **Gremlins II:** *great graphics, incredibly faithful to the film and annoyingly difficult.*

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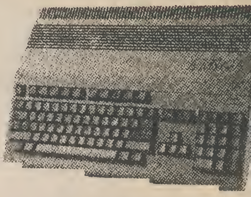

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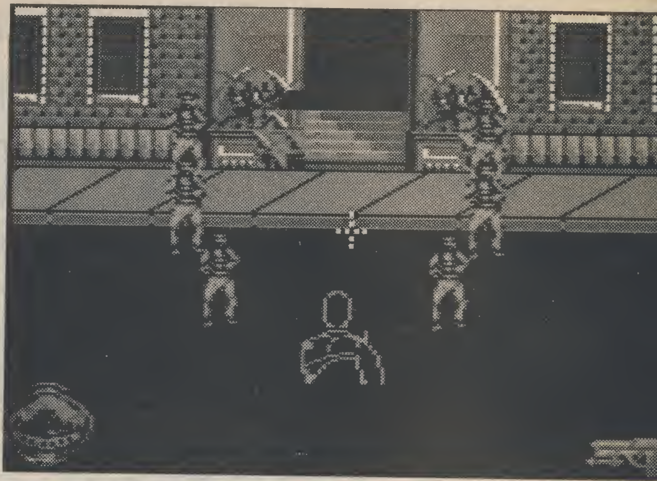


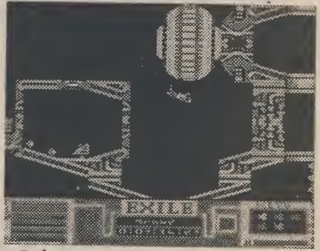
• **Predator II:** ***a bit of a departure in style for Mirrorsoft.***

Problems stem from the nature of the game itself (but then, don't they always). It's very tough and unforgiving when it comes to game play. As the game unfolds by screen flicking, you realise that the only way of learning to play is through trial and error. But every error results in a head-to-head confrontation with the 'Game Over' monster (well, you lose a life and that's bad enough). How many times someone will really want to start all over again is a matter open to contention. Suffice to say that when the beast arrived in the office, I wasn't the only one to go part way up the wall playing it. Definitely worth trying though.

PENN IN EXILE

Speaking of trying, Gary Penn (sorry, Gary), former editor of *Zzap! 64*, has just become a special correspondent for *Commodore Format*. In the forthcoming issue he files a report on a new Audiogenic game that's already got him chomping at the bit.

Exile is the product of collaboration between Jeremy Smith (author of the fab Firebird game, *Thrust*) and Peter Irvin who for his sins once wrote a smashing game himself. But he wrote it on a BBC and was sent to do penance at university. I don't want to spoil that report so that's as much as I want to give away – except to say that *Exile* is probably only a month away and this isn't the last you'll read about it by any means.



• **Exiles:** ***It may look a bit strange but its way and promises to be good.***

AUDIOGENIC OVERDRIVE

Staying with the big A for a moment, the company has just announced that it will be releasing *Test Drive III – The Passion* (whaaat?) before too long.

It really does sound as though the company can't let go of the teenage-car-girl fantasy and why should it?

And just to prove that the back seat of a coupé isn't the only place it gets sporty, the company is about to bring out a number of sports games under a new label, to be known as *Sports Action*.

Among the first titles on the label will be the self-explanatory *Sports Action Rugby*, with code courtesy of Denton Designs, and*Super League Manager*, which will be a sequel to Emlyn Hughes' *International Soccer*. Man of the match on that one is Gary Bassett who I understand has been taking coaching from Lou Macari. Sounds like the boy done good.

And just in case you missed it first time around, *Graham Gooch World Class Cricket* is to be re-released in time to distract us from the summer's forthcoming test match disasters.

END OF ORLANDO ROAD

It's not as though the C64 is still being supported by massive numbers of freelance programmers who can consistently deliver high-quality code. Many talented names now appear tagged on to the latest 16-bit games.

Now Nick Pelling has quit programming for the C64. Pelling (aka Orlando) programmed some respectably long-lived games in his time, including *3D Pool* and *Firetrack*, but he's had enough of the old beige beastie and has decided to move on to pastures new.

What's almost as much of a shame as his departure is the fact that there isn't exactly a long list of successors waiting to step into the considerable breach.

QUICKIES

Colditz is finished and I stand by what I wrote last Christmas about it's potential to be one of this year's biggies.

Virgin has definitely dropped its *Silver Surfer* project. If you had heard anything about it you can now let it slip from your memory.

On the other hand the company has at last finished *Viz*. Remember folks, it's for adults only (some hope they have of enforcing that one).

Carl Muller who worked on the C64 version of *Teenage Mutant Hype Turtles* is going flat out to make sure that *Speedball 2* is ready for summer. The game is being brought to you by Cap'n Bob's very own Mirrorsoft.

That company's own Imageworks label is bashing out an adaptation of *Predator 2* in time for the film's release. This one represents something of a departure for Mirrorsoft in that normally they handle film licences by selecting memorable scenes from the film upon memorable scenes from the film upon which they're based and make a package of mini-games out of them (as with *Back to the Future II*). All four levels of *Predator 2,* however, will contain the same style of game play.

And if you still haven't heard enough about Mirrorsoft, let me tell you that it has just about wrapped up *Back To The Future III* and (surprise, surprise) it consists of four mini-games stitched together loosely but nicely enough. It looks like being the best of their *BTTF* efforts (third time lucky?) except that the first level's something of a nightmare to play. Well, you can't have everything.

Sean Masterson

Spectrum

THE DISK OF THE CENTURY!

Good news for SAM owners! A veritable bargain has just been released by the Contact user group. *PD '90* is a compilation of the best public domain software for the Coupé this year, squeezed onto one disk and available to any SAMster for a solitary quid.

It's a bargain of such magnitude that I feel like I should be bursting through the page in classic MFI advert style and telling you to BUY BUY BUY!!. As it is you'll have to make do with an enthusiastic recommendation of this disk containing eight prime cuts of SAM PD from the computer's first year.

The highlight for me is *Tetris,* a SAM version of the classic computing standard. There are also some excellent demos which should turn your Spectrum owning friends green with envy, and even a respectable footy management type affair.

For £1 *PD '90* is an absolute snip, available from Contact, 10 Ricardo Road, Old Windsor, Berkshire. SL4 2NU. (Cheques made payable to Mr C. Duggan.)

Contact plans to follow this up with a regular bi-monthly disk comprising the best PD of the last two months for a similarly meagre sum. An excellent idea, I'm sure you'll agree, and one that should cut down on the hassle of sending off for PD which tends to vary in quality from smashtastic to decidedly dodgy. So loud cheers, pats on backs and promises of gratuitous amounts of free drinks go to Contact.

OFFICIALLY UNOFFICIAL

Oh yes, regarding the thrilling controversy that's dominated the *Express* letters page recently concerning The SAM Coupé Users' Group. For once I didn't actually make a mistake, as the bloke from INDUG keeps insisting, by passing on information about a SAM user group which has decided to call itself after the computer it is bothering to support. That's its name and I, your humble columnist, merely conveyed it to anyone who might be interested, never implying it was an official user group.

I admit that I do make my fair share of real mistakes, cock ups and blunders in the column without being told I'm wrong when I'm not. Anyway what are they expected to call themselves? The User Group For Owners of That Spectrum Compatible Computer With Blue Feet Whose Name Sounds a Bit Like Cam Soupé?

LETS GET TECHNICAL

Richard.Bak has deluged me with techno tips in the past and now he's gone and given us a whole machine code listing. The following routine is for use in conjunction with a Multiface and was written by Robert when he experienced memory problems while using the afore mentioned spanky little add on. As you know, I'm a bit dim when it comes to complicated things like this so here's the author to tell you what the following arrangement of strange words and numbers does:

"This routine allows you to swap between two short (up to 8K) programs or (as in this case) between a short program and the first part of a long one, provided they don't both use the same area of memory outside the saved 8K block. Of course, it can be

• To celebrate the first full year of the Coupé there is new compilation of the best SAM PD software of 1990 which includes that old computer standard, Tetris.

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loaded anywhere convenient; the swapped Spectrum RAM area can be other than 30000, and the whole of Multiface RAM could be used (start=8192, length ditto) if you don't mind corrupting the jump vector."

Robert suggests using the routine as follows:

1) Load SWITCH and GEN (either way round!);
2) Use GEN
3) Debugging is needed, so RANDOMIZE USR 65500 to switch GEN with whatever random rubbish is in Multiface RAM
4) Load and use MON
5) RANDOMIZE USR 65500 to save MON and bring back GEN...etc.

And Robert warns: "Be careful not to press the button on the Multiface or whatever is in memory will be corrupted."

Right, I think that's everything that Multiface owners need to know in order to indulge in a wild routine switching session. The only thing that needs to be said is a fawning thanks, cheers and "that's fab" to Robert.Bak.

```
                ORG     65500
F3              SWITCH DI
DB 9F                   IN    A,(#9F)
01 40 1F                LD    BC,8000
11 30 75                LD    DE,30000
21 08 20                LD    HL,8200
1A              LOOP    LD    A,(HL)
F5                      PUSH  AF
7E                      LD    A,(HL)
12                      LD    (DE),A
F1                      POP   AF
77                      LD    (HL),A
23                      INC   HL
13                      INC   DE
0B                      DEC   BC
78                      LD    A,B
B1                      OR    C
20 F3                   JR    NZ,LOOP
DB 5F                   IN    A,(#5F)
FB                      EI
C9                      RET
```

PRIX POKE

The poptastic Steven Kemp has shown boundless generosity before by sending in some tips and he's just unleashed more frightening quantities of the stuff by sending me another batch of Speccy game help. Firstly here's a short but effective poke for the recently rereleased cheapy classic *Grand Prix Simulator*. Bash it in, type RUN, press ENTER and start your tape from the beginning.

```
1 REM Grand Prix Simulator by
Steve
55 POKE 53152,201
100 MERGER "" : RUN
```

Brilliant. And what reward does Steven want for this spiffing display of tipping? Or, more to the point, what does he have any chance of actually getting? Obviously aware he's dealing with a cheapskate his only request is for me to say hello to hacking star Miktor. So.."Hello Miktor". (Was that OK?) Thanks again Steven!

Robin Alway

ST

PURE HYPE

I recently encountered a superb shareware program which goes by the name of *Hype*. This nifty little piece of software owes a lot to the Mac program *Hypercard*. The idea is that you create a series of cards which are interactive so that you by clicking on certain areas of one card you can leap to another of your choice. There may a large number of different routes to get through the pack.

What's more, sound can be added, making the program perfect for educational environments.

Wooleysoft has acquired the rights to the program and has launched an updated medium-resolution version which makes extensive use of text, graphics and sound. The new version runs from within GEM and works with all STs. The full package costs £19.95 and is available from Wooleysoft, Humblesknowe Cottage, Ramoyle , Dunblane, Perthshire, Scotland.

STE SUPER RAM

We all know that the STE has got some serious hardware that's received very little attention from third party manufacturers. That's all set to change with the release of Fast Technology's Turbo 20 adaptor.

This American company specialises in souping up the ST range and the Turbo 20 does just that. The board which runs on a 1040STE, has an onboard clock and enables the user to upgrade memory to a massive 14Mb. A special version will be available for the Stacy and the Mega STE offering expansion possibilities of 10Mb.

With this kind of RAM upgrade possible, the STE looks set to finally shrug off its image and become the only choice for DTP, music and video applications. Combine 14Mb of memory with one of the widely available graphic expansion cards and you have true power without the price.

Contact Fast Technology at PO Box 578, Amdover, MA01810 or telephone 0101 508 475 3810.

DOWN AT THE SYNTHWORKS

Evenlode Soundworks has a reputation for producing slick front end editors for a wide range of synthesisers. These programs mean you don't have to mess around with the tiny LCD display on the synth and can modify sounds and sequences via your ST.

The latest Synthworks programs are ready to ship and cover the Korg range. The M1, M1R, M1EX, M1REX, T1, T2, T3 and M3R are all covered.

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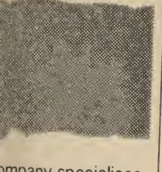

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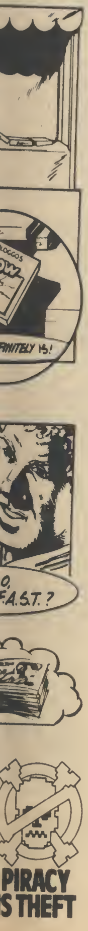
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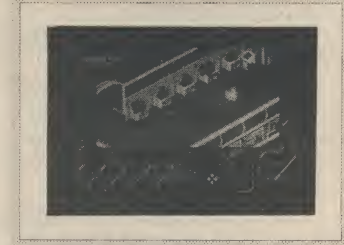
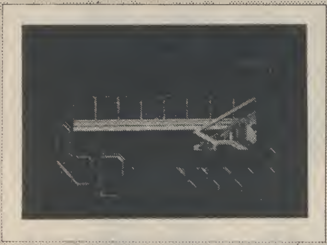
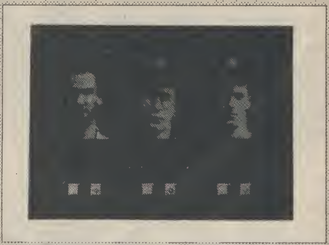


• Wrecker is just the game for people for like firing at sqidgey flying things.



• But you also have to keep an eye on the way the beacon is functioning.



• Where's Sigourney Weaver? Aren"t women allowed on space beacons?

Audiogenic reckons that its new game, *Wrecker*, is going to be a smash with ST space adventure fans. In it you take on the role of a space beacon keeper. Normally this is quite a cushy job.

All this is about to change, however, as your beacon has just gone to red alert. A virulent space macrobe is coming your way and if it reaches you the beacon will self destruct. Your task is to thwart the malevolent virus by stopping it gorging itself on its favourite meal: plasnoglass.

You control a team of droids and the beacon via a series of icons. Droids can be manufactured, programmed and recharged from a series of special operations rooms. Atmosphere and gravity have to be controlled for obvious reasons and other crew members can be woken from cryogenic sleep.

Inside the station, your character can move about freely. This means accessing tunnels, lifts, zippways and glassrooms. You can get into a space suit and move around outside the station or get into a space hoover and fly further afield. The game is pencilled in for a mid-April release.

The programs are accessed via a graphic interface and give access to all the synthesiser's inner workings. An effects library, a drum kit editor, sequencer utilities, library functions, computer aided sound creation, patch identification and an on-screen keyboard are all included in the program.

If you own one of the Korg synths and are fed up with the LCD display then write to Evenlode Soundworks at The Studio, Church Street, Stonesfield, Oxford, OX7 2PS or phone 0993 898484 and be ready to part with £165.

MIDI BASH

Nobody could have predicted how successful MIDI music creation was going to be. However its effects on the music and computer industry have been far reaching and this is reflected in the amount of third party support for MIDI related products. This interest is reflected in the fact that there will be a MIDI music show aimed at anyone who's into making music the electronic way.

The show will take place from April 26-28 at the Novotel hotel in Hammersmith. Special events will take place during the show, including seminars from well known personalities on such subjects as live performance, studio recording and home studio work. Of special interest to readers of this column will be the seminar on Atari MIDI sequencers, although "Programming drum machines – they don't have to sound like robots" could prove to be quite amusing. The MIDI Music show is being run by Westminster Exhibitions, and for further information telephone 081 549 3444.

PROXIMITY ALERT

It would seem that the ST DTP market is alive and kicking as both *Pagestream* and *Proxima* are due for major updates.

Pagestream 2 will be a colour version and we're told by Softlogic that will be a vast improvement on all previous versions. *Pagestream*'s big opposition is *Proxima* from Network News Services which has just been updated to version 2 with lots of new features; text will change foreground and background colours as appropriate; letters can be subjected to various distorting effects such as blocking, x-raying, twisting, rotating or slanting; the editor will work in columns or in a word-processing mode; block editing, cut and paste and a spell checker have all been incorporated and the whole speed of the program has been tweaked.

Graphic objects can be created with a CAD module. These graphic items can exist on up to 32 million levels (memory permitting). IFF, TIF, IMG, GEM, DXF, IGES and HGPL file formats can be incorporated into your pages. A PostScript font editor will be included in the package and these can be displayed on screen in either bitmapped or vector forms. Full colour seperation output will be available, all in virtual colour.

Contact Network News Services, Dock Road, Tilbury, Essex, or telephone 0375 859103.

Andy Hutchinson

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WHOLE WIRED WORLD

A quality hallmark for Atari software, Intel loses copyright on a certain three figure number and much more from our globetrotting reporter, Steve Gold.

INTEL LOSES BATTLE OVER 386 COPYRIGHT

Intel has lost its court battle with Advanced Micro Devices (AMD) over the use of the number `386' in its family of 32-bit microprocessors.

Intel remains unbowed by the US court decision, however. In a statement, Thomas Dunlap, the company's vice president and general counsel, said: "As a result of this decision, we will refer to the 'i386tm' microprocessor and 'Intel386(tm)' microprocessor in order to more clearly distinguish Intel products from imitations."

Unsurprisingly, AMD's chairman Bill Sanders said that the court's decision was a wise choice: "It removed another obstacle to Advanced Micro Devices' breaking Intel's monopoly in the IBM-compatible 32-bit microprocessor arena."

He added: "The ruling is also an important one for the manufacturers of personal computers, who are now protected from legal harassment by the leading supplier of 386 microprocessors if they wish to use the number `386' in their product names."

So what does the removal of copyright on the numbers 386 mean to the average computer user in the street? The chance of cheaper PCs, that's what.

While Intel has kept its prices high on the chips that drive PCs, AMD – as well as several other PC makers – have been working on 386-compatible chipsets which will cut the cost of high-powered PCs. If they can call their chips 386s as well, then there will be no confusion in the marketplace.

VARIOUS FORMATS, ONE PRICE

Strategic Studies has begun shipping an interesting fantasy/strategy game called *Warlords* in the US. The package is available for the PC and Commodore Amiga, with versions for the Apple Mac and Atari ST expected very soon. Unusually for a multi-format release, it will cost $50 in all versions.

According to the Californian software house, the program invites you to destroy enemy castles in "ruthless economic warfare while turning their own castles into impregnable fortresses."

For further information Strategic Studies can be contacted on 0101-415-932-3019.

ATARI MARK OF EXCELLENCE

Expect to see a new sticker on Atari product releases from the US.

The 1,300-strong (and growing) Atari Users Association has begun applying its own `mark of excellence' to ST products and word is that software houses are sitting up and taking notice.

According to the official blurb from the AUA, its own members vote on whether a new product deserves the mark and, if it does, the group awards it to the software house concerned.

The AUA hopes this scheme will inspire software/hardware developers to produce ever more excellent products for the ST marketplace.

Contact: AUA, PO Box 123, Canonsburg, PA 15317, United States. BBS – Tel: 0101-412-746-8699.

CUTTING DEVELOPMENT COSTS

One of the biggest problems about developing serious software for the Amiga is that, unless the author/software house charges the earth for the package, the development costs take an awfully long time to trickle back into the designer's bank account.

Techbyte, a growing software house in Montreal, Quebec, reckons it has the answer in the shape of its Software Portability Environment (SPE). SPE is a multi-platform software development system, the idea being that you create your software under SPE on one machine and then let SPE convert it for use on another computer.

The reality of the situation is, of course, that nothing is ever quite that simple. Still, if the program saves a recode, or allows packages to be swiftly ported onto the Commodore Amiga it can't be at all bad.

According to Bill Gattis, president of Techbyte, the programming environment on the Amiga was designed in close liaison with Commodore US.

He describes the Amiga project as "an extremely appropriate extension to the Software Portability system, especially in view of the impressive capabilities of the Amiga in the areas of graphics, animation and multimedia."

Pricing for the SPE system on the Amiga depends on a number of variables, such as site licenses, the number of users and whether the licensee intends to generate standalone code from the program. Despite this, Techbyte reckons that its licencing terms are extremely reasonable.

Techbyte can be contacted on 0101-514-670-9452.

BOOST FOR PEN-DRIVEN PCS

This time next year, don't be surprised if your notebook computer doesn't have a keyboard, at least not if Microsoft plans reach fruition.

The operating system software giant has announced that 21 computer manufacturers have committed themselves to the fledgeling Microsoft Pen Windows operating system.

According to Microsoft, specific details about products and release dates will be issued later by the individual hardware manufacturers, some of which include Canon, Grid, Fujitsu, Hitachi, NCR, Samsung, Sanyo, Seiko Epson, Sharp, Toshiba and Wang.

Pen Windows, which has been under development by Microsoft since 1988, is a graphical operating system designed to provide the best platform to take advantage of the benefits of a pen while using a computer. Several manufacturers are expected to release stylus-driven computers before the end of the year.

A key feature of these computers will be the ability to recognise handwriting and convert them into standard ASCII data. ■

ATARI STARTS SYSTEM 7.0 BANDWAGON STARTS ROLLING

Macintosh Family Oct. '90

Apple is reported to be putting the finishing touches to its System 7.0 operating system software.The computer giant has just sent out final beta versions of the software to more than 13,000 hardware and software developers around the world.

"We're in the final phases of preparing System 7.0 for release to Macintosh users," revealed Jim Davis, Apple's director of System Software Marketing."We're dotting the I's and crossing the T's, and we should be shipping System 7 to customers in the first half of this year."

Apple is hoping that in conjunction with the trio of new Macs launched at the end of last year, System 7.0 will give MS-DOS a real run for its money. Watch this space!

• Will the combination of the budget Macs and System 7.0 threaten DOS domination?

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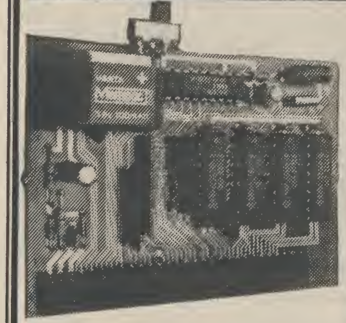

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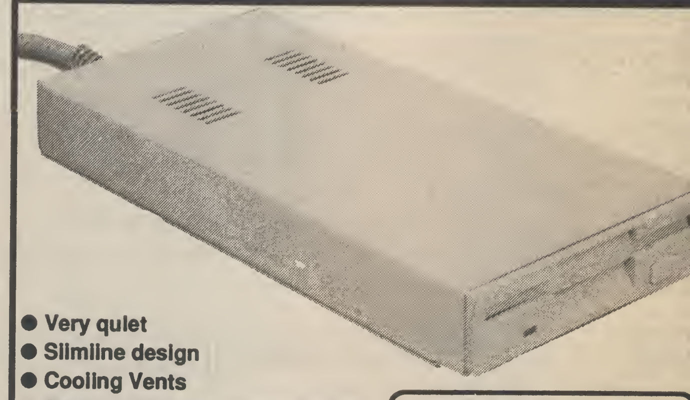

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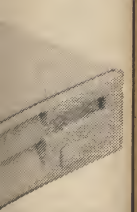

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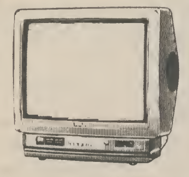

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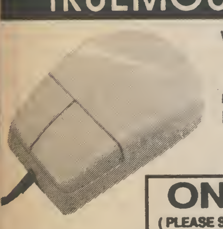

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N.B. Due to the large variance in design of the Atari ST, there is a small minority of boards in existence which may require a little soldering.

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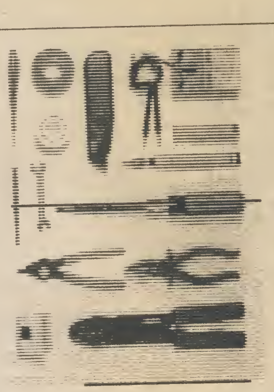


Turn your breadboard ideas into professional PCBs. Keith Pomfret shows you a program which can turn your PC into a PCB designer.

You may have the best hardware idea in the world but no-one's going to buy it if it looks like metal spaghetti welded to an old biscuit tin. Open up your PC and you'll see row upon row of neat green cards purpose designed to elegantly arrange the various circuits in a tidy configuration.

The manufacture of these boards is still generally the domain of the specialist company, but it's possible to do all the design work and produce professional PCB designs using your PC.

The simplest way to do this would be to choose an art package in which you could define patterns or brushes and define all of the symbols and tracks that you would be likely to need. This isn't the most elegant solution, but will work and I've seen quite a few commercial designs that started as a basic PCB design in an art package.

At the other end of the power and cost spectrum are full blown CAD (computer aided design) packages that cost thousands and need a power PC or workstation running some exotic operating system to function. Again, this is a workable solution but far beyond the budget and requirement of most casual users.

Somewhere holding the middle ground is Easy PC from Number One Systems. When it hit the carpet behind the front door I was inclined to disregard it on account of its sub £100 price tag, but a need to design a gearbox control module for the family coach meant that it soon saw use.

A software product is only as strong as its manual and a design program specialising in a discipline that is probably new to most users must be intuitive and simple to understand. With the review pack came a set of demo files that were in essence a complete walk through giving a demonstration of the package's features and their use.

Easy-PC describes itself as a Printed Circuit Board Layout and Circuit Diagram Draughting Program. Installing on the office PC (a VGA 386) was as simple as copying all the files to a pre-prepared directory The office machine is a Silica/Goldstar 386 and is a pretty powerful piece of kit. However, Easy-PC will run on any PC that is at least a 512K CGA XTclone.

Design work of any kind can be mathematically intensive, but the Easy-PC program managed OK without a math co-processor. Once installed and running, Easy-PC offers a written tutorial that gives hands on experience of the program using pre-prepared schematics and drawings.

A mouse is desirable to the operation of Easy-PC but not essential. After installing the software and playing with the demo, I rang Number One Systems to verify a couple of points and in conversation was told that the hands on back up and help they could offer the new and inexperienced user was based on experience.They use Easy-PC in their own drawing offices.

Back to basics and although it's fun to play with any design package, your £98 plus VAT and carriage should be put to better use than doodling so you need something to design.

You shouldn't attempt to design and produce a PCB unless you already have a circuit up and going. I've spoken to several hardware afficionados who thought that they could throw away some of the initial development in favour of on-screen editing and de-bugging, but in real terms that doesn't work.

First, design and build your circuit on a breadboard or one of the trackboards that you can get from suppliers such as Tandy. or Maplin.

When you're sure that you have an efficient working product, it's time to try to transfer your design from breadboard to PCB.

One of the readily available templates in Easy-PC is a small euroboard. This loads an outline with a euro connector on to the screen and you are able to work with some idea of your constraints. Other pre-determined symbols are available and you can save any design that may be a good jumping off block for something else.

A simple but useful PCB is a switchable hardware serial port for a PC. In order to design this, you'd need to design a short PC card PCB. It may not be a bad idea as you design the board to save the generic PC card design. This way, you'd save yourself some work next time you wanted to design a PC card.

Likewise any other circuit board that used a generic shape. This way you could build up libraries of often used board shapes. Taking that philosophy a stage further, often used processors and chips that are generally configured the same way could be saved in the same way that regularly used clip art is saved in DTP programs.

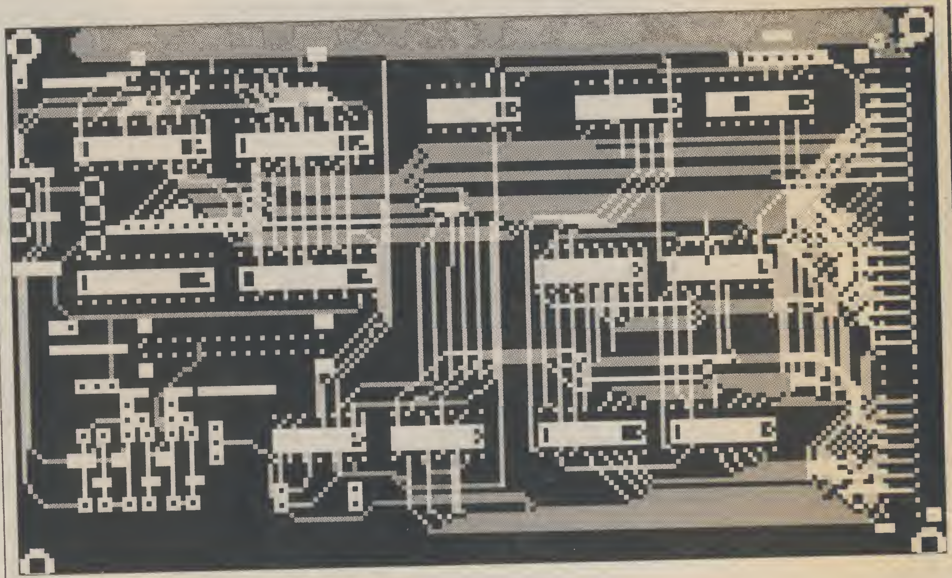
This modular approach to design may not seem essentially necessary if you're only planning one project or the occasional design but as you learn the rudiments of design, the ability to use oft used circuits and components will be a benefit in terms of saved time and productivity.

Listen to half a dozen wireheads and you'll hear at least six : "There's only one way to design a PCB properly," theories. In short, find the way that you work most efficiently and comfortably and use that. First attempts will look clumsy and before you shoot off to the local PCB manufacturer, it's probably best to let your masterpiece lie for a few days. After a few nights sleep, you will see obvious changes that can make the board tidier and more elegant. Once the fine tuning has been done, see if you can do the job on a smaller board. A small board with shorter tracks may look busier but it is also less use of resources.

As well as the ability to design manufacturable PCBs from the ground up, Easy-PC can take some of the stress out of simple circuit schematics too.

Easy-PC is a well featured design package that can best be described as DTP for the circuit designer. The output to file or printer is easily good enough match the most stringent manufacturing criteria and at £98 the package is excellent value for money. ■

EASY-PC costs £98 plus VAT and carriage (£118.16) and is available from Number One Systems *on 0480 61778 or Fax 0480 494042.*



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* Orders received 18th March and after will not qualify for free disks.

TECH TIPS

Having problems with your printer? Wonder how you can get your office and home computer to talk to each other? Ever wondered how ATOnce can help you? Send your stories and queries to Keith Pomfret, Tech Tips , New Computer Express, 30 Monmouth Street, Bath BA1 2BW.

■ HELP! Amiga printer

You guys are totally brilliant and between the weekly *New Computer Express* and *Amiga Format*, there is very little of interest that either seems to escape your notice, or goes uncovered. Keep pluggin! Now, can your expertise come up with an answer, please, regarding my printer problems – yes there had to be a reason for the grovelling opener!

I have an Amiga and among the software I use is the Publishers' Choice DTP program and I dumped what I produce to my Star LC24-10 printer.

All the equipment is not that old, so isn't worn or abused. My problem is the printer and horizontal lines. This is a problem that began just prior to Christmas and commenced with the lines appearing infrequently and often only stretching about two inches across the page. It's got progressively worse and I don't know why. I can't class this as 'handling' because density, or lines of density, has never been a problem.

Could it be the stepper motor? Printer head? Preferences? Can you please help in any way?

Now we have got that matter out of the way, I have a suggestion for a future feature. I have a modem. I read the usual articles relating to BBs, etc, and use them no problem. But never have I read anything that would take the newcomer, such as myself, through the various stages that will allow us to download or even upload files. My comprog is ACCESS! but I have yet to successfully download anything from BBs'. Am I just being thick or are there others like myself out there with the same problem?

Thanks again for any assistance you may be able to provide re the printer.

Gerry Lovell, Reading, Berks

First, try your printer on another Amiga and using different software to check whether it really is the printer. If the problem doesn't appear with other software, you could have a printer driver problem. If it doesn't appear with another Amiga, you've an Amiga problem. If it's neither of these, then it looks like it might be the printer

If the printer is still in warranty, return it to the supplier with an example of the flawed output. If it's out of warranty, either take it to the supplier or to another reputable computer/printer repair and service agent.

Thanks for the idea for the feature. It must be getting time for a comms splurge again. The only problem with your idea, though, is that out of at least 20 comms programs across the different machines, none seem to work in exactly the same way. The process of downloading is essentially the same, but different programs approach it in different ways. A particularly user friendly comms program allows you to pre set download and upload criteria and implement it by the simple expedient of clicking on an icon. Other programs expect some input from you and some of the more unfriendly ones make you drop to the operating system and type all sorts of mumbo jumbo.

Access, however, is one of the easier to drive ones and if you're having problems with it you should first check that you are trying to work with programs that are compatible with your machine and then check that you are following the correct upload and download protocols.

There are several file transfer protocols and if both ends of a comms link aren't using the same, you will get garbage. If the sending system is operating in the X Modem protocol, the receiver must also operate in X Modem and so on. Watch out for comms specials, but you'll have to get to know your own comms software better too.

■ HELP! Slow laser

At present I run both an Atari 520 STFM and an Acorn A3000 on the latter I use ATELIER and EUCLIO 2. I have been offered a Ricoh PC Laxezer 6000, with a laserjet and emulator cord and three toner cartridges for £370 (its counter shows 45000 copies). Is it a good buy? I have seen it in use with a PC200 with hard drive, the output was good with four tone grey scale, but it took 15 minutes to plot a simple graphic – Is this normal?

Paul Houghton, Rotherham, Yorkshire

The laser that you are thinking of buying is definitely not the ideal add-on for your Archimedes. As well as being slow and having little memory, it isn't suitable for some of the output that you'd want to do, even with emulation. The best way to get a cheapish laser for an Archimedes seems to be to trundle along to the All Formats show or suchlike where you can see the requisite piece of kit in action. On two recent visits to the All Formats, there have been Arch lasers and various other peripherals for sale although it's probably best to check with the organiser before you invest in a trip. If you plan to buy a laser and you know what software you wish to use with it, make sure that you see it demo'd with the software before you buy.

■ HELP! Monitor stuff

My Philips CM8833 monitor has died on me and has to go away for repair. Fortunately, I also own a Commodore 1901 monitor. My problem is connecting this to my Amiga A2000. I know such a lead is available, but I would rather assemble one myself. If at all possible, could you please illustrate or explain which pins from the Amiga D-plug connect with the RGBI plug for the monitor. I would be very grateful.

Simon Dayton, Essex

If you want to make the lead yourself, the company to contact is Simpson Electronics on 0332 760353. Paul Simpson works on the principle that by supplying the goods and offering technical help, he provides a complete service.

As well as the two connectors and the electric string, if you twist his arm, he might even scribble down a schematic for you so that you can put together the lead yourself.

■ BARDS! Tale

First a cautionary tale.

I recently bought a 1Mb RAM upgrade for my 520STFM from Evesham Micros. This is the type which gives you four SIMMs slots once it is fitted, made by Zydec. The guy in the instruction manual fitted his upgrade with consumate ease, but I found that with mine the ribbon cables were stretched like fiddle strings. They were so tight in fact that as I reassembled the ST the plugs kept pulling out. After several frustrating attempts I was forced to cut cable slots in the RFI shielding to get the circuit board to sit in a "comfortable" position.

Once this was done everything worked fine, so it seems such a shame that a good product is spoiled by skimping on the cables, another three or four centimetres on the length of all the connectors would have made things so very easy, for little extra cost.

OK, so now I am zipping along with 1Mb of RAM, but those empty slots are playing on my mind, seems such a waste.

Now the questions:

1) Are the SIMMs an industry standard, or do I have to use SIMMS made specially for the ST? I have seen 1Mb PC SIMMs advertised fairly cheaply, can I just replace my 256K SIMMs with these? If my SIMMs must be Atari specific could you give me the name of a supplier and an approximate price.

2) I know from looking at the circuit board logos that my Commodore MPS1250 printer is made by Citizen, can you confirm my suspicions that it is in fact a boxed and badged Citizen 120D?

If you can it will make finding printer driver software much easier.

Brian Sherry, Essex

Thanks for the tip about short cables and how you solved the problem. Your suspicion that SIMMs are not all created equal is correct. The ones that go in an ST are 8-bit wide by 256K or 8-bit wide by 1Mb. The PC ones are 9-bit by 1Mb and therefore incompatible.

The ninth bit is there to check parity and the ST already has this feature implemented elsewhere. I am told that it is possible to disable the on-board parity and run PC SIMMs on an ST, but it's a lot of hassle when the prices aren't really that different. If you want the full run down on what chip does what, the person to contact is Chris Barrow at the Chip Shop on 061 476 3070. Your printer problem is a mystery to me and the chaps at Commodore and Citizen were understandably tight lipped about it too.

■ HELP! Amiga emulation

I wish to buy an A500 Amiga with 1Mb of RAM and fitted with a PC emulator. Two options seem to present themselves: the A501 memory expansion plus the ATOnce card, or the KCS board (which comes complete with extra RAM). Which of these do you recommend?

The KCS is easy to fit and has the extra RAM and comes with MS-DOS, but is only an XT emulator, costs almost £300, and is limited to CGA graphics.

The ATOnce is AT standard, boasts EGA graphics, and is about £100 cheaper, but is difficult to fit (I have the technical know-how of a small gerbil and none of my local dealers seem keen).

The KCS apparently gives 16 colours on screen, but a recent magazine review stated that CGA could only give four colours in low resolution and was virtually obsolete on real PCs. Which is correct?

I suppose the bottom line is – do you know of a firm that will supply me with an A500 ready-fitted with ATOnce?

R Pluck, Cleveland

To remain firmly planted on the bottom line, the answer to your question is Silica Shop. If you order the ATOnce from them at the same time as you order your Amiga and ask for it to be supplied fitted, they will do the job. for you. Silica is on 081-309 1111.

HELP! Protext rescue

I think this enquiry will be of interest to many of your readers who, like me, have compromised between their own WP requirements and their kids requirements to play great games by purchasing an STE (rather than IBM).

I have an Atari 1040 STE with colour monitor, external hard and floppy drives and Star LC10 printer, but I want to be able to transfer at home *First Word* files to *Display Write 4* on IBM at work.

As I have read in *Express* (and elsewhere) the procedure is to format disks to IBM and then save the *First Word* files in ASCII format, that is with WP mode off. I have tried, but honest it doesn't work.

It could be *Display Write 4* which does not recognise the file type? But if the procedure is usually OK why do PD libraries offer *First Word* to ASCII conversion programs?

Please help or recommend mail order for *Protext 5*.

Adrian Davin, Surrey

I hereby recommend mail order for *Protext 5*. The number that you need is 0733 68909. This will put you straight through to Arnor HQ, home of *Protext*.

TIP! Booting Amiga

Here is a handy tip for all those new users of the Commodore Amiga. You will probably have noticed (well it is difficult to miss!) that the power supply is a separate unit about the size of a breeze block. It takes up lots of room on the desk but unfortunately it also has the on/off switch on one end.

Since the cable is quite long, it is quite easy to put the PSU on the floor under the desk. You may think it rather awkward to turn the machine on or off but this is quite easily performed with a suitable use of pressure applied with the sharp end of your foot. This is quite common in Amiga circles where it is known as Kickstart. Hope this proves helpful.

Paul Bates, Derby

And I suppose that you keep the mouse in a cage and that the serial port is for digitising old episodes of *Neighbours*. You forgot the all-important information that an Amiga power supply used in this way can also double as a foot-warmer and Economy 7 storage heater.

HELP! Social stuff

I am having great difficulty finding a program to store membership details for a social club. I need to list any members who have not paid subs. And print lists of members and membership numbers. I have tried Commercial and PD houses with no luck, any help will be appreciated.

G Caine, Cumbria

Whoops. Here's another example of how easy it is to forget the most important detail. I would gladly take a shot at answering the question if only you'd tell me what machine you have ...

HELP! Doner Kebab

Inspired by I Spakes letter (*Express* 118), I am writing to you in the hope that you will be able to help me with my word processing problems also.

In the near future, I am going to need a WP or some such package, to write a PhD thesis, on my Amiga 500. The package would have to support super – and subscripts and also, if possible, Greek characters,

I also need to produce a letter-quality output for this (including subscript, superscript and Greek) and hope that there is a 24-pin DM printer that will do the job as I can't afford a laser printer. I'm looking at the Star LL24-200C in particular as it would be nice to be able to produce colour images from *DPaint II*.

Is there a word processor for the A500 that will do this? (my budget is around £150) Will the printer do the job I want it to? Your advice would be greatly appreciated.

LT Hogg, Bradford, Yorkshire

Protext version 5 scrapes in at £149.95 and will do everything that you need and more besides. Contact Arnor on 0733 68909 for full details and specifications of *Protext*.

HELP! Amegas

Could you help me with a small problem. I purchased an Amiga 500 last year which had the *Tenstar* software bundled with it. The problem is *Amegas* now refuses to load; all my other software loads OK.

The only information I have is that the game is made by Pandora. I cannot find their address or telephone number. As I can't find another copy of this game anywhere I was hoping you could shed some light on the whereabouts of this company. I know it is an old game but my wife and I are big fans of it and would really like another copy.

Thank you for your attention of this matter.

Mr S Stinson, Scunthorpe,
South Humberside.

And I can't run the publisher of *Amegas* to ground either, but I'm sure that someone out there will donate an original of *Amegas* to you (no pirate copies). So if anyone wants to donate *Amegas* to Mr Stinson, send your name and address and I'll pass it on.

SOLVED! Pooled solutions

The following program is a solution to Mr T Cobbe's' random number generation of eleven numbers and sort routine (*Express* 118). It was originally written in Commodore 16 Basic sometime ago, as part of a more complete pools selection program, which enabled it to generate random numbers within a variable range and a variable number of selections, as Mr Cobbe did not say which Basic he uses.

Rather than `Do-loop, Do-until` or `Do-while`, which are less common in earlier examples of Basic this program takes 0.125 seconds average to run.

Note: The extra remark dots are to give double spacing to assist readability.

Pools Selection and Sort Program
Atari ST Computer
J Hawkins 2/91

This program was written in GFA Basic V2. It should be easy to get it to work with other Basics. Adding line numbers and changing to `Go to random` line with the appropriate line number should work. The `If-then` syntax may need changing. The random function syntax differs from Basic to Basic.

```
Dim Selections(11),Numbers(58)!  set up arrays
For N=1 To 58
  Numbers(N)=N                  ! load numbers array
Next N
For A=1 To 11
  Random:
  N=Random (58)=1              ! generate random
number
  If Numbers(N)=0 Then          ! check if number
already used
    Goto Random                 ! get number if no
number in array
  Endif
  Selections(A)=N               ! put selected
number in array
  Numbers(N)=0                 ! delete used number
from array
Next A
For A=1 To 10                             ! sort routine
start
  For B=A+1 To 11
    If Selections(A)>Selections(B) Then  ! swop
numbers if true
      S=Selections(B)           ! hold array
number in variable 5
      Selections(B)=SELECTIONS(A) ! swop one array
number
      Selections(A)=S           ! put variable S
into other array
    Endif
  Next B
Next A                                      !
sort routine ends
For A=1 To 11
  Print Selections(A)
  Print
Next A
Input " Do you require another selection of
number y/n?  ";S$
If S$="Y" Or S$="y" Then
  RunEndif
End
```

J Hawkins, Bristol

SOLUTION 2! Dirty pools

```
 10 REM Re Trevor Cobbe's Pools letter
 20 REM Prog for Spectrum
 30 REM ALL MATCHES INTO ARRAY a()
 40 LET n=58: LET s=11: LET t=0
 50 DIM a(n): DIM b(s)
 60 FOR f+1 TO n: LET b(t)=a(x): LET a(x)=0
 70 REM SELECT 11 RANDOM NOS.
 80 LET x=RND*(n-1)+1
 90 IF a(x)=0 THEN GOTO 80
100 LET t=t+1: LET b(t)=a(x): LET a(x)=0
110 IF t<s THEN GOTO 80
120 REM BUBBLE SORT
130 REM Shell sort no advantage
140 REM with such small sample.
150 FOR f=1 TO s: FOR g=1 TO s-f
160 IF b(g)>b(g+1) THEN LET c=b(g): LET
b(g)=b(g+1): LET b(g+1)=c
170 NEXT g: NEXT f
180 REM PRINT RESULTS
190 FOR h=1 TO 11: PRINT b(h): NEXT h
```

Run time 3 secs.

H Griffiths, Hereford

◆ GOODS WANTED

FED up with my Amiga games will swap for PD or make me an offer. Ring 081 749 5036 ask for Anthony.

ATARI ST Public Doman contacts watned all ready have over 200 titles. Write to Matthew Tillett, 30 Prospect Road, Dulton Broad, Lowestoft, Suffolk MR32 3PT.

C16 +4 ORIGINAL software on cassette anything wanted must be cheap send list to Michael Vainola, 5 Woodside Cottages, Highwood, Chelmsfood Essex CM1 3RD. Hi to Steve Packer for help with Retrograde.

IN NEED of an Atari SM124 mono monitor. In exchange I can give you an unpacked Microvitec colour monitor worth £250. Please contact Kevin on 0376 520247 any time.

WANTED, Archimedes C Compiler (ANSI) and/or programmers reference manual. Cash paid. Ring Mark on Lincoln 0522 521606 evenings or 502406 days.

CAN anyone help me, I require a Spectrum 128K +3 manual willing to buy. John Findlay, 2 Thorndon Close, St Pauls Cray, Orpington, Kent BR5 2SJ.

CASE for Toshiba T1200FB portable and instruction book. Also external 5/14" drive. Tel Charles Woking (0483) 764857.

WANTED for Mega drive. TAG 50 joystick wanted in g.w.o. Will pay up to £15 if in good condition. Send details to Nick, 55 Hayes Lane, Wimborne, Dorset BH21 2JB.

COMMODORE Vic 20 games wanted urgently. Phone Presatyn 852882.

WANTED Amiga Battletech. Pay cash or Part exchange 3D Pool. Desperate please phone 0203 303441.

ATARI 130XE and XCII cassette (Rambit fitted would be ideal!) 0438 729890.

AMIGA contacts wanted 100% reply guaranteed. Write to Andy Hogg, 2 The Blackthorns, Burgess Hill, West Sussex RH15 8HW or phone 0444 246921 evenings.

PUBLIC Domain Clip Art wanted for the ST. Send details to Peter Gunning, 47 Auchingane, The Tryst, Edinburgh EH10 7HX. (swap for PD software).

WANTED your dead (or alive) computers Spectrums, Commodores, Electrons etc. Plus any software Contact Les 0708 721008.

WANTED unserviceable Timex Sinclair 2040 printers. Will collect Sleaford, Kings Lynn, Enfield, Dundee or Glasgow areas. tel 0334 838316.

WANTED ST Happy Discovery cartridge. Tel 0224 823495. Sensible prices please.

HELP Amiga XT Bridgeboard user urgently requires manuals and disks to install the card. Can I borrow yours? Will pay postage. Phone Stuart 0224 323 737 (Aberdeen).

NEW Spectrum +3 owner requires software (mainly serious stuff) 3" disks or tapes, also any spare bits of hardware, books "etc". J.M, 82 Tiree Drive, Cumberland G67 1NX.

WANTED has anyone out there got details of the RGB socket pin outs of the Acorn Electron. Please ring Andy on 0922 724005 with details.

WANTED tractor feed for Epson LQ1500 DTP for Atari (not Timeworks) 1 meg Simms for Atari. Tel Fred 0633 266647 eves.

ANYONE in the Staffordshire area wishing to sell a good working Amiga 500 with mouse and mat, TV modulator , workbench and manuals for £180 up to £200. Ring 0782 644902.

WANTED broken Atari ST's to repair/improve my setup. Any condition considered will pay up to £40 depending on quality. Phone 0275 375496 after 6pm. Also wanted First Word Plus manual.

REAL 3D Turbo wanted for Amiga also assorted mags for sale inc Ace, NCE, approx 150 in all £30 the lot. Will not split, buyer collects. 0472 851209 after 6pm.

WANTED Amiga software books, utilities etc. Send details to S Collie, 101 Bute Road, Wallington Surrey SM6 8AE.

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WANTED. Logitech Scanman hand scanner, cash paid and collection arranged if in south east. Tel 0703 254132. For use on Amstrad XT.

WANTED A book or books on machine code for the Commodore 64 computer. Telephone 08985 (Blackpool) between 6 and 8pm.

WANTED instuctions for Casio PF-3000 data bank super memory computer. Contact Michael Vainola, 5 Woodside Cottages, Highwood, Chelmsford Essex. CM1 3RD. Also wanted C16 +4 games on cassette.

WANTED Megadrive or Lynx. Will swap for my Amstrad CPC464 with Light Pen and games (green monitor). Write to G Milnes, The Bungalow, C/P School, Stockton on Forest, York YO3 9UP.

SWAP Yamaha PSR-37 keyboard with music books + tape, excellent condition hardly used, 1 year old, still boxed, for Neo Geo +1 game, phone Chris now 0509 504145 any time.

STUDENT looking for dead computer equipment. Would pay postage for any unwanted items for use. 0359 69735.

WANTED reader manual for C.Ioh 1550, 32 column printer. Will pay £5 + post (03985) 438 or write, 2 Town Mead, Oakford, Devon EX16 9EW.

WANTED Any of these games for Amstrad CPC.(tape or disc) Alien, Boulderdash, Construction Kit, Little Computer People, or The Sydney Affair. Darren, 23 Grosvenor Road, Leyton, London E10 6LG.

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OPENING TIME

Another week, another dose of DOS. The nights are getting shorter, or is that the days getting longer? I never can tell and thoughts are turning away from sitting in doors playing fun games with Louts *1-2-3* (*that's Lotus isn't it? – Sub*). The Spring is calling to even the most hardened computer user, juices are rising and maybe it's time to start thinking about how to make the most of the Summer.

My idea is to form a ComputerWorld theme park along the lines of Alton Towers. But, instead of stupid rides which leave your stomach plastered all over the floor and your lunch all over your 'I've Seen Windows 3 and It Worked' souvenir T-shirt, we could have interactive fun.

I have a dream! I see high-speed database file conversions between people who have never even been introduced. I see terribly dangerous activities such as not backing-up data on a massive scale. I see arcades full of machines into which you are supposed to spill coffee and into which you, or a paid employee, gets to breath smoke from Capstan Full Strength cigarettes.

In short I see an entire, enclosed area where people get to do all the things which they have always wanted to do to computers.

Imagine 15 floor towers from the top of which you get to throw PCs, PCWs and Macs. Think for a minute what it would be like to have row upon row of Aunty Sally hackers. Lines of spotty little pirates at whom you get to throw balls of mag tape until you knock them into vats of melted disks.

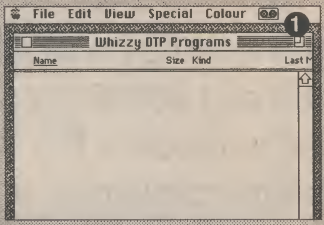
Dwell on the possibility of halls bursting at the seams with NeXT colour-stations and spray cans full of dayglo paint to wipe that smug matt-blackness from their CPUs. Heaven. And once you've got it all out of your system you can go back to your own machine and lavish tender loving care upon it.

I think it would work. Do you?

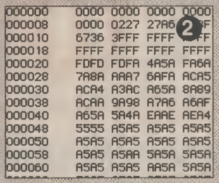
UPGRADE CLEVER CLASS WITH LISA SCUZZY

This week we show you how to turn your computer, whatever it might be, into a fully functioning Apple Macintosh. According to our Lisa, converting your machine, be it a CPC or a 486 PC, is a piece of cake. All you need to know is a little bit about programming.

Essential pieces of equipment for this task are as follows: Mac-O-Make compiler/assembler/disassembler from KnoBsoFt (£223.99). A piece of paper, a pencil, Cedric LeMay's authoritative programming tome How To Turn Your Horrid Old Computer into a Mac Really Easily, No Probs (Centrefold Press, £22.95, 1212pp) and a deal of patience.

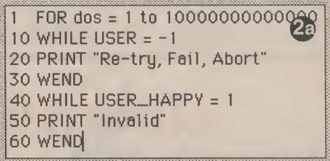


1) First get some idea of what the Mac desktop looks like. You can do this by phoning the following toll free number 0101 803 737 333 838 3939 which is the Independent Global Mac User's club. You will need to have a modem and the ability to download files in MacDoWnloaD format at 1200 baud.

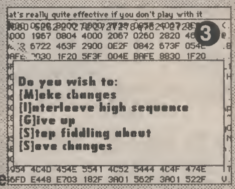


```
000000     0000 0000 0000 0000
000008     0000 0227 27A6   F
000010     6736 3FFF FFFF   FF
000018     FFFF FFFF FFFF FFFF
000020     FDFD FDFA 4A5A FA6A
000028     7A8A AAA7 6AFA ACA5
000030     ACA4 A3AC A65A 8A89
000038     ACAA 9A98 A7A6 A6AF
000040     A65A 5A4A EAAE AEA4
000048     5555 A5A5 A5A5 A5A5
000050     A5A5 A5A5 A5A5 A5A5
000058     A5A5 A5AA 5A5A 5A5A
000060     A5A5 A5A5 AA5A 5A5A
```

2 & 2a) Second have a quick peak at the rather simple code which goes into constructing the desktop. You will need to compare this with the code which makes up a common operating system such as MS-DOS



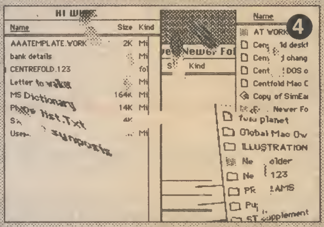
```
1  FOR dos = 1 to 1000000000000
10 WHILE USER = -1
20 PRINT "Re-try, Fail, Abort"
30 WEND
40 WHILE USER_HAPPY = 1
50 PRINT "Invalid"
60 WEND
```



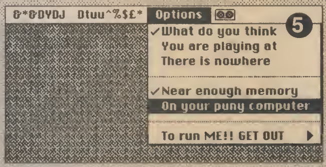
```
at's really quite effective if you don't play with it
000  1967 0804 4000 2067 0260 2820 46
  6722 463F 2900 0E2F 0842 673F 054E
BAFE 0030 1F20 5F3F 004E BAFE 8830 1F20

Do you wish to:
[M]ake changes
[I]nterleave high sequence
[G]ive up
[S]top fiddling about
[S]ave changes

954 4C4D 454E 5541 4C52 5444 4C4F 474E
6FD E448 E703 182F 3A01 562F 3A01 522F
```

3) Make the necessary changes using Mac-O-Make . This really could not be simpler. All you have to do is copy the Mac desktop from your downloaded file and paste it into your own operating system's high memory low user interface coded system file.

4) Once you have everything pasted in. You will need to check the details in How



To Turn Your Horrid Old Computer into a Mac Really Easily, No Probs, chapter 121, section 3. This deals with altering the Potential Stack Register so that it reads concurrently with the Inverted Keyside Stack. This might be a bit fiddly but keep trying.



5) Finally reboot your own computer and you will see the change. From now on you will be able to run all Macintosh and NeXT programs on your machine without any modification. Be sure to work either with a back-up of your machine or with some else's entirely. If you encounter any problems it's probably because you haven't followed the instructions properly.

A CENTREFOLD EXCLUSIVE

ANCIENT GREEKS USED COMPUTERS FOR MATHS

By our archaeological correspondent Idaho Brown

In a shock revelation made at a press conference last Tuesday lunchtime, head of the London Greek Hardware Association, Mr Theakolopilik Duraniccabrosos, claimed that evidence had been discovered of ancient Greek computing.

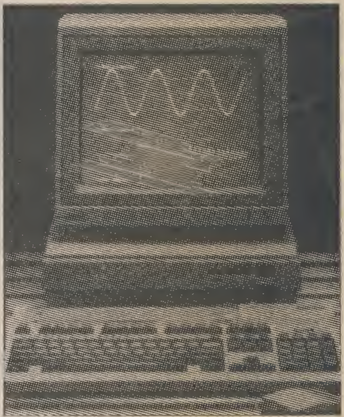
Mr Duraniccabrosos said that:

- Archimedes was named after his computer and not the other way around.
- Eureka was the name of the first Operating System
- Spartans used hard drives in calculating battle strategy

Further claims were made as to copyright on silicon-based systems, keyboards, the Elgin marbles, and BASIC.

Commenting on the startling claims Mr Duraniccabrosos said: "It is obvious from recent digs that the ancient Greeks made good use of digital technology. Having invented electricity in 486BC, the next logical step for our forebearers was to create television and the computer. Firm evidence has arisen leading us to believe that several on-line systems were available in the Athens metropolitan area. The skills were lost following a massive Ouso drinking spree attended by Aristotle, Archimedes, Plato, Pythagoras, Euclid and Homer. We our presently consulting our lawyers who will be in contact with Intel, Motorola, IBM, Apple, Amstrad, Microsoft, and Sam Computers. We are very confident in our case and have right on our side".

Sources have suggested that Mr Duraniccabrosos is in fact the same man who lead the Free Bolivian Software League of Croydon in its bid to sue Tandon. This case focused on the fact



•The Archimedes. Named after the ancient Greek or was it the other way around?

that Tandon is in fact an anagram of Anndton, an obscure Bolivian rebel leader and machine code addict. That case continues.

We spoke to emminent German bone-digger Herr Howard Von Tut who commented: "It's you again, me ringing in the nacht middle yes? I your number have traced so watch your back regions! Now *!!!* off out of it!"

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LEARNING TO LISP

Lisp is much more than just list processing – it works well in describing state and applying rules or processes. Mary Branscombe uses Lisp to make meaningful expressions.

In terms of last week's definition of functional languages, Lisp does not strictly qualify. However, it is more widely available than most of the true functional languages, although Miranda is gaining in popularity, and it is based on the Lambda calculus. There are advantages to allowing side effects, to set against the need to order the steps of the program. Lisp is well suited to describing situations or "states" and applying rules or processes that cause transformations from one state to another.

States can be used to describe a wide range of problems, from the state of the board in a game of chess, to the stages of a mathematical problem being solved, to the description of an unknown disease that we are trying to identify. If we know how to cause different states, we can search through all the possible states of the problem, until we find one that we can use as a solution; this is called a "state space search" because we are searching through the space occupied by all the different states. To make these transformations one variable at a time, as we would have to if a function could not change the values of any other variables, would be rather impractical.

Like Prolog, Lisp is based on recursion. It applies this technique to functions, rather than to logical definitions; to evaluate a function, evaluate those functions that make up the main function, and so on until an answer is reached that can be passed back up through the chain of function calls to provide an answer for the main function, the program itself.

Lisp is an interpreted language for manipulating symbols – objects that represent an item of data. Individual symbols can be assigned to atoms, variables or constants defined in a program, and lists are a very convenient pre-defined data structure for storing groups of symbols. There are built-in operators to process them, but programmers can define virtually any data structures they require. All objects and structures in Lisp are "first class citizens," which means that there are no restrictions on what objects can be used for. Any object can be passed to a variable as a value, passed to a procedure as an argument, returned as a result or stored in another data structure, so that all expressions can refer to any other expressions in the program, directly or indirectly. Added to this freedom is the fact that the symbols or objects in a program do not have to be given values by the program until such a decision is unavoidable and these values can be altered without much difficulty. Another advantage is the power that some dialects of Lisp give you over memory allocation and the recovery of memory used for data that is no longer needed – garbage collection.

There are a multitude of Lisp dialects; Scheme was designed for teaching programming and although it is not fully compatible with Common Lisp, it is an excellent starting point. Once you have learnt how to use Scheme, other dialects of Lisp can be seen as extensions of what you already know.

Objects in Lisp that can be executed, as opposed to those that simply represent basic symbols, are represented by Lambda expressions, a term which derives from the Lambda calculus on which functional languages are based. Lambda expressions in Scheme start with the keyword Lambda, followed by a list of parameters which may be empty, represented by (), and a sequence of expressions. When a Lambda expression is applied to its parameters, these expressions are evaluated in order and the last value calculated is returned as the result of the function application. The Lambda expression we saw last week, for calculating the square of a parameter in a rather roundabout manner, would look like this in Scheme:

```
((lambda (x) (/ (+ (*xx) (*xx)) 2)) 5)
```

Here, (x) is the list of parameters and (/ (+ (*xx) (*xx)) 2)) 5 is the sequence of expressions. Five is taken as the value of x and $2x^2$ is divided by two, to give x^2, or 35. Lambda expressions may have a fixed number of parameters, or they make take a variable number of parameters depending on the circumstances; this is a particularly useful feature. If the number of parameters is fixed, the parameters are enclosed in brackets, with comments indicated by semicolons, as follows:

```
((lambda (aFriend)  ;a single parameter
    (DisplayList  "hello  "  aFriend));  the
expressions
    'madHatter)     ; the single argument
; hello madHatter
```

DisplayList is simply a function to display a number of objects. Because it is inside quote marks, hello is treated as a string and the program does not try to execute it as a function. The single quote before madHatter serves the same purpose, because madHatter is the argument that the expressions are applied to, not another expression in the list; we are telling the interpreter to pass the quoted object on without trying to do anything with it. Many dialects of Lisp provide the eval function, which forces the interpreter to try to evaluate an expression, but this is not available in Scheme. The response of the program is 'hello madHatter'.

If the number of parameters is not fixed, then we do not put brackets around them. Again, the arguments are quoted so that Lisp passes them to the expression DisplayList rather than trying to evaluate them.

```
((lambda someFriends  ;no brackets
    (DisplayList "hello " someFriends))
    'madHatter      'doormouse      'redQueen)
;expression given 3 arguments
; hello (madHatter doormouse redQueen
```

The arguments are put into a list and passed to the DisplayList lambda expression.

Having looked at the way Lisp works, next week we will look at the basic constructions of the language. ■

THINGS ABOUT LISP

- Lisp is designed for manipulating symbols.
- Although it is not strictly a functional language, Lisp is based on Lambda calculus.
- Common Lisp is the nearest thing to a Lisp standard.

WHAT IS LISP?

There is no ANSI standard for Lisp, probably because it was initially distributed mainly by users taking copies of the language with them when they left MIT, where McCarthy had developed the language in the "MIT Artificial Intelligence Project." Many dialects of Lisp developed in the 70s and early 80s, the most popular of which was the Interlisp partly developed at Xerox Parc and Stanford University. The use of Lisp in universities and the many modifications made to the language within those universities made it hard to find a standard, but Common Lisp represents the only agreed standard so far.

Dissatisfaction with the specification of Common Lisp led Jerry Sussman of MIT to develop Scheme, a version of Lisp designed for teaching programming. Versions of Scheme and Common Lisp have been developed for parallel processing. Object-oriented programming, where the code of the program is separated into "objects" which deal with particular types of data, was catered for in some Lisp dialects and a standard has been devised to go with Common Lisp, the Common Lisp Object System (CLOS).

Many smaller languages, such as MicroPlanner and Conniver, have been written in Lisp and Prolog was first implemented in Lisp.

The previous lack of low-priced implementations has contributed to the relative unpopularity of Lisp, but there are many good implementations now available, some of which are distributed as Shareware.

HAVING PROBLEMS WITH YOUR PROGRAMS?

Whether you program in Lisp or Logo, if you let us know about your code, we'll try to untangle it.

THE PD COLUMN

Adam Waring discovers a futuristic footie program and a magical adventure game for small children available at a mere snip from the realms of Public Domain.

Seven Tiles • Amiga • NBS • G199

Seven Tiles is a futuristic football simulator, which resembles a PD version of the classic full-priced game *Speedball.* It's loosely based on the nation's favourite sport, in that there are two goals at either end of the pitch, and you have to place the ball in the back of your opponent's net while stopping the same thing happening to you. Apart from that, though, it's very different.

The background is a sort of metallic grid, constructed mainly from bas-relief squares. The playing pitch is many times larger than the screen, which scrolls to keep up with the progress of the ball.

The game starts with the ball in the centre of the pitch. Players from each team position themselves in both halves – there's no boring off-side rule here – but they are all some distance away from the ball. When the whistle blows both sides have to charge towards it in a mad scramble to gain possession.

Having so many players means that passing is quite accurate and profitable. Indeed, each player is only allowed a certain amount of time before he has to relinquish the ball. A bar at the top of the screen indicates how much time you have left. Kicking is achieved with the fire button; the longer you hold it down before releasing it, the harder the ball is struck, and the further it travels. Should it hit the side of the pitch, it merely bounces from the walls that surround the playing area. There's no such thing as a throw-in in this game. In fact there aren't really any rules at all except for scoring.

You always control the player nearest the ball. This works well most of the time, but occasionally it is annoying when you're chasing the ball with one player, and another suddenly appears nearer to it. For a few moments, you're unsure which is which, and lose control.

Either one or two players can take part. In a one player game the computer takes control of the other team. The computer plays well, but is not unbeatable, so it's quite a challenge playing your Amiga. The real fun is, of course, when you face a human opponent. Then the competition really is fierce, as you battle it out goal for goal.

The players are quite small and viewed from above. This isn't a drawback, however, as it makes the field seem so much larger, and so much more impressive in comparison.

The sound is great; there is a constant excited buzz from the crowd over which are a variety of sound effects and digitised samples of speech which announce things like bonuses, half time and so forth.

WHERE TO GO FOR THAT ESSENTIAL PD SOFTWARE

TOM ZUNDER

23 Rosedale Way, Bramley, Rotherham S66 0LE. Tom is author of *Michael's Big Adventure.* He has put it into the public domain, where it'll be available from many of the established libraries, but you can also buy it directly from him. *Michael's Big Adventure* costs £3 for a double-sided expanded disk, £4 on two normal double-sided disks or £5 on three single-sided disks.

NBS

132 Gunville Road, Newport, Isle Of Wight, PO30 5LH. Telephone 0983 529594. An impressive professional Amiga PD supplier which produces a regular glossy fanzine. The disks cost just 99p each, with a 60p postage and packing fee for every order, irrespective of the amount.

CALEDONIA PD

250 Old Town Road, Hillton, Inverness, Scotland, IV2 4JP. 0463 225736. This ST PD from north of the border is the sole distributor of the TV titles program. Up to nine disks £2, 10 or more £1.50.

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This is one of the best PD games I've seen on the Amiga. If you're a fan of fun, then I strongly recommend that you add it to you collection.

TV titles 2.0 • ST (STE compatible version) • Caledonia PDL • AU-0050

If you own a cam-corder then it's more than likely that you'll have had a shot at making a home movie with your expensive toy. And what better way to give your movie a more professional finish than using proper titles for the credits.

This is a demo version of a TV titling program (the full program costs £25 from Caledonia). A full set of effects is available, so as well as the traditional text scrolling up the screen, there are various fades, colour cycling operations, and so forth with which you can experiment .

A rolling demonstration shows what the program is capable of doing and a text file containing step-by-step instructions accompanies the program.

Michael's Big Adventure • ST
• Tom Zunder

Michael was lonely. He wanted a friend with whom he could play. One day a wizard came along and magicked one up for him. What exciting adventures they would have together!

Michael's Big Adventure is a great little graphic adventure for kids. It was written by Tom Zunder for his eight year old son Michael. The pictures are so rough, they look like they were drawn by Michael himself, rather than his Dad. Wonderful stuff!

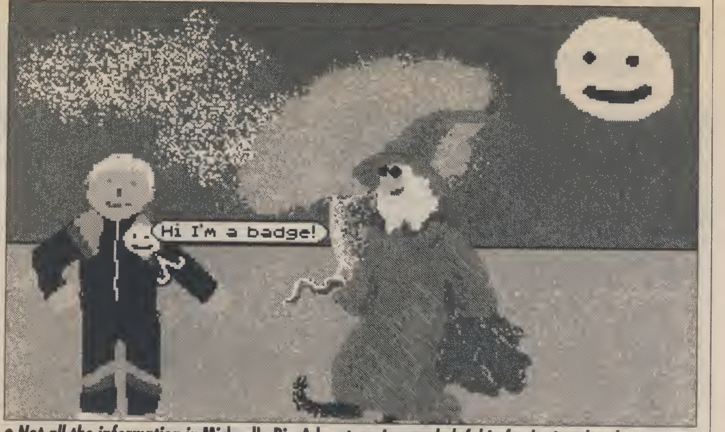
It's not one of those boring traditional adventures, where you have to type in reams and reams of text to perform even the simplest action. *Michael's Big Adventure* (we'll call it that for short) is much friendlier, as no keyboard interaction is necessary. Instead it features pictures which you point at and click on using a mouse.

You can click anywhere you like on the screen, but information is not always forthcoming! A good bet is to click on the characters that appear in the game, and on any new objects you come across. For example, Michael wears a badge that says things like "Hi! I'm a badge".

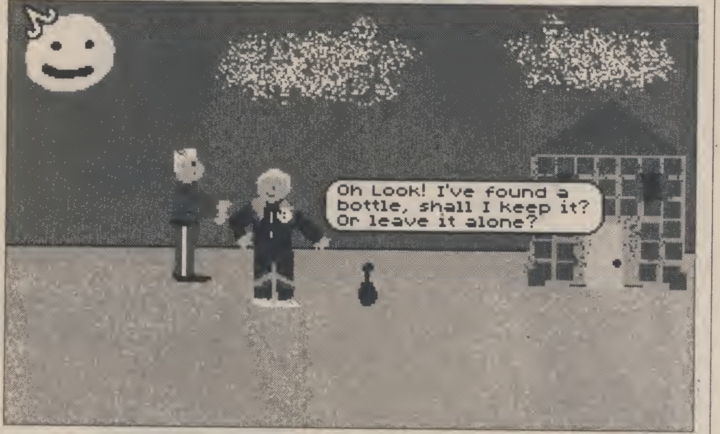
When text does appear it takes the form of a speech bubble. Often these present you with a number of options and you make decisions by clicking on the course of action which most appeals to you.

For the first few screens you have little control over events as there is only one option available on each. But once the initial sequence is over, there are far more choices and the game really starts to open up. It is possible for Michael to be killed, though, so beware of strange men offering to show you his puppies.

Michael's Big Adventure was written using *Talespin*, the adventure creation system from Microdeal. ■



• *Not all the information in Michael's Big Adventure is very helpful in furthering the plot.*


Oh Look! I've found a bottle, shall I keep it? Or leave it alone?

• *The graphics aren't exactly Shadow of the Beast but they are appealing in their simplicity.*

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LOW-COST SCANNING

Jeff Walker samples the new GoldenImage JS-105 image scanner for the Amiga and ST. At less than £200 it could be the best bet there is...

If you are into desktop publishing on your Amiga or Atari ST, a scanner of some kind is a toy you'll love to play with. The best scanners are colour flatbeds, and they cost too much to mention. Colour hand scanners start at around £600. But then colour is not much use to you unless you have a top notch colour printer or you are into colour reproduction, two more expensive hobbies. What the casual or monochrome desktop publisher needs is something cheap and cheerful that does the best possible job for the least possible money.

For a monochrome hand scanner, the GoldenImage JS-105 is at the top end of the price range with a recommended retail price of £277, although I've already seen it being discounted to £199. This £80 discount is important, it made all the difference in the world to my perception of this bit of kit.

The JS-105 is beautifully packaged, which has without a doubt added to its cost, but it also means you shouldn't be frightened of buying it mail order. It comes in a good, solid cardboard box with plenty of foam inside to protect what is a delicate piece of equipment.

TOUCHING MOMENTS

The software bundled with the scanner – for both the ST and Amiga versions – is *TouchUp*, developed by Migraph Inc in the US. It comes with an impressive 170 page manual. I spent an evening reading this before even installing *TouchUp* on to my hard drive. By the time I had read all there was to read it was 3am. But I couldn't go to bed – *TouchUp* sounded so exciting I simply had to have a play. Now, I have to admit that I'm a sucker for anything that's remotely connected to art, but it's a long time since a piece of software has kept me from my pit. Liz Mitchell gets my vote for Manual Writer of the Year.

TouchUp is a black-and-white art package with three sets of tools for painting, clipping and scanning. The first tools you'll want to play with are obviously the scanning ones, it's what you bought the thing for, after all. But first you have to plug in the hardware.

The power supply and scanner cables plug into an interface, which in turn plugs into your parallel port. The scanner itself has 6ft of lead attached, so if space is tight on your computer desk you'll be able to position another flat surface nearby for doing your scanning on.

Scanning is very easy. First you choose settings for the switches on the scanner itself. On the right-hand side there's a wheel for adjusting contrast and a four-way slider for selecting 100, 200, 300 or 400 dots-per-inch scans. On the left-hand side there is another four-way slider for selecting either Text Scan – that's pure black-and-white, no grey tones in between (like text) – or three sizes of grain for scanning photographs or anything else that is more than two colours.

Next come the software switches. You need to tell *TouchUp* whether you want to use the full (4-inches) or half (2-inches) width of the scanner, plus the height of what you are going to scan, which can range from 2-inches to 14-inches. The American developers have added a Metric button for us Europeans.

A further click on the Scan to Full icon sets the ball rolling. You need to pull the scanner over the picture you want to scan slowly and evenly. If you pull too quickly a small red light on top of the scanner flashes to warn you that you are almost going too fast for it. Slow down slightly and it will stop flashing. If the light goes out, you have gone too fast and data has been lost. It sounds fiddly, but it's not. You soon get the hang of it.

DOWN TO DETAIL

Once your picture is scanned in there are a lot of things you can do to it. For a start, you've probably scanned in more than you wanted, which is where the clip tools come in. *TouchUp*'s clips are similar to the brushes that paint packages like *DPaint* use. The difference is that you can't pick the clip up and move it around. By drawing a clip box around part of the picture you have scanned you have simply isolated the area inside that box from the rest of the scan.

As well as being able to save the whole scan, you are able to save just the clip area. And you can manipulate the clip area – rotate it, slant it, mirror it, copy it, fill it with a pattern, or attempt an automatic clean-up process which removes stray black and/or white pixels.

TouchUp has various zoom facilities, one of which is a negative zoom to show you the whole "page", which can be some 1600x5600 pixels for a full 4-inches x 14-inches scan. You can't see details, but it's usually quite easy to see approximately the area you want to clip.

This ability to work on the reduced page is one of the things which makes *TouchUp* special. For instance, you can re-scale the clip by shift-dragging the handles of the clip box. Or you could use a paint tool to erase the junk you don't want outside the clip area and another paint tool to draw a frame around what's left.

TouchUp can save pages and clips in a variety of monochrome formats — IFF, Encapsulated PostScript Format (EPSF), MacPaint, PCX, TIFF, GIF, Degas, IMG and PrintMaster. You would have thought that if it can save images in all those formats, then it can load images in all those formats. Sadly no. You can't load EPSF, GIF or PCX images. But you can load all the rest, along with TNY and NEO format. Monochrome images will load straight in, colour images must be mapped to black-and-white; you are given the choice of various mapping methods and dithering options – trial and error is the only way through this puzzle, although the manual does an excellent job of describing how colour mapping works.

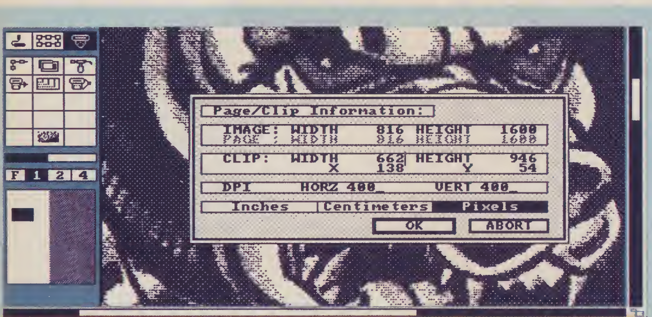
The paintbox part of *TouchUp* has tools for drawing lines, ellipses and boxes as well as freehand, a selection of 36 fill patterns, a spray can, paint brushes of any shape or size and a zoom facility for touching things up. A special icon allows you to draw Bezier and B-Spline curves, the stuff structured drawings are made of.

WORTH THE DOUGH?

For scanning in black-and-white line drawings, logos and the like, it is a supremely competent tool. It is less competent at scanning colour and greyscale images, but then so is every other monochrome hand scanner. With continual trial and experiment, however, it is possible to get acceptable results – especially from illustrations, as opposed to photographs.

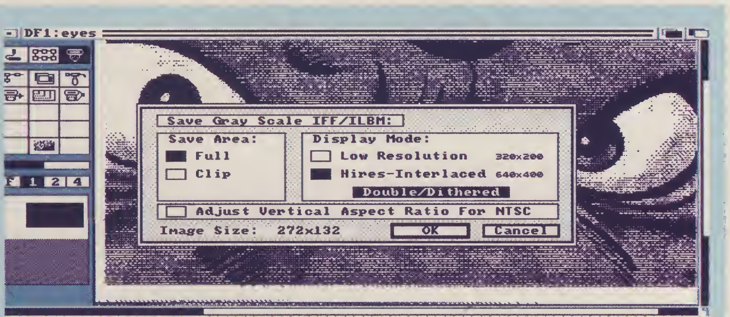
The Amiga software is too wobbly and too slow; you will swear at it often, in between marvelling at some of the things it can do. The ST version, from which the Amiga version was ported, is much more stable and a joy to use. It is the most powerful program I have seen bundled with any Amiga or ST hand scanner. ■

JS-105-1M/2M for the Amiga/Atari ST costs £277 from GoldenImage on 081-518 7373.



Page/Clip Information:
IMAGE: WIDTH 816 HEIGHT 1600
PAGE : WIDTH 816 HEIGHT 1600
CLIP: WIDTH 662 HEIGHT 946
X 138 Y 54
DPI HORZ 400 VERT 400
Inches | Centimeters | **Pixels**
OK ABORT

• The size of the clip area can be set more accurately from here, and the dots-per-inch information can be adjusted to suit the resolution of your printer.



Save Gray Scale IFF/ILBM:
Save Area:
■ Full
☐ Clip
Display Mode:
☐ Low Resolution 320x200
■ Hires-Interlaced 640x400
Double/Dithered
☐ Adjust Vertical Aspect Ratio For NTSC
Image Size: 272x132
OK Cancel

• Scans can be saved as 16 grey level graphics, after which they can be loaded into your favourite paint program and colourised.

GAMES WEEK

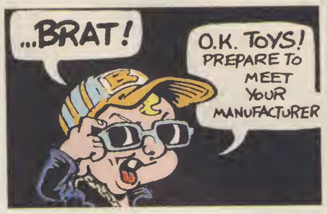
Neil Jackson gives you the low-down on the latest new games, playing tips, cheats and news.

Mirrorsoft is quietly active again this week, plotting its future grasp on the world of 16-bit, with its two top secret titles which have been bubbling away in the background for a while now. First up is ***Mega-lo-Mania***, which is the brainchild of past-masters Sensible Software. It could be described as a global conflict simulation, a planet-in-a-bottle, or a giant ant-farm. Falling into the same class as games like ***Populous*** and ***Sim Earth***, ***Mega-lo-Mania*** puts you in control of a part of a whole planet. Your objective is simple – get control of the lot.

To do this, you must influence the life on the planet and make the inhabitants fight wars to gain control. There are many different types of species on the planet, though all are basically human. Some are cave-dwellers, with little or no sophisticated tools, while others are high-tech warlords with thermo-nukes and other nasty playthings. You set the thing in motion, and then influence the level of wealth, industrial development and evolution. Before long, you may find that your cavemen have developed weapons and are attacking the non-aligned portion of the world. They may even have gone so far as to have built planes and nukes themselves, but are operating them with the subtlety you'd expect from cavemen.

There are three computer opponents which are also struggling to gain control of the world. All are worthy opponents, but some can be cajoled into joining forces with you, thus furthering your chances of success. But in any event, you'll have to destroy all the opponents to win, whether they are allied or not. Mirrorsoft is promising the best-ever sound effects for any computer, with digitised voices and a host of amusing little touches. That's probably why it is earmarking this as a "one or more megabyte only" game. Games Week looks forward to giving this a real test, sometime soon. Mirrorsoft has yet to announce a firm release date, but it's expected around March/April for the ST, Amiga and PC.

Mirrorsoft's next title looks set to be a hit if the concept is anything to go by. The aptly named ***Brat*** is a game all about a small, angelic baby who has something of a personality crisis. Once asleep, the cute little darling undergoes some kind of Jekyll and Hyde transformation and turns into a street-smart roughneck who roams the strange worlds of his dreams looking for trouble. You must guide this weird "Calvin and Hobbes meets Bart Simpson" type kiddy safely through all kinds of danger.


...BRAT!
O.K. TOYS! PREPARE TO MEET YOUR MANUFACTURER

Brat features a huge playing area, tons of objects to collect and use, and hazards-a-plenty on the way. In his dreamland, you'll stumble across Toy Town, the Park and Space World, where Brat's true personality will be revealed. Presumably, it's not a nice one!

Mirrorsoft is keen to announce that ***Brat*** has a unique mode of control, but is keeping quiet as to what it is, exactly. Mirrorsoft reckons, however, that it's radical and makes ***Brat***'s playability second-to-none. Games Week will be checking this just as soon as it can get hold of a copy. The release date for this offbeat cyberbaby is set for 24 April on ST and Amiga, at the usual price of £24.99. ■

TOP 10 SIXTEEN-BIT GAMES

THIS WEEK	LAST WEEK	CHART WEEK	TITLE	PUBLISHER	MACHINE
1	1	3	*Lemmings*	Psygnosis	AG
2	NE	1	*Turrican 2*	Anco	ST AG
3	2	12	*Speedball 2*	Mirrorsoft	ST AG
4	3	5	*MiG-29 Fulcrum*	Domark	ST AG PC
5	5	26	*F-19 Stealth Fighter*	Microprose	ST AG PC
6	4	7	*Final Whistle*	Anco	AG
7	13	13	*Powermonger*	Electronic Arts	ST AG
8	10	26	*Kick Off 2*	Anco	ST AG PC
9	18	11	*M1 Tank Platoon*	Microprose	ST AG PC
10	6	2	*Fists of Fury 2*	Virgin	ST AG

ST = Atari ST AG = Commodore Amiga PC = IBM PC or compatible OT = Other
Chart compiled by Gallup. © European Leisure Software Publishers Association.

PLAYING TIPS

CAPTIVE

Amiga and ST

Just staying alive

Direct from the horse's mouth, as it were, Games Week presents 25 hot tips for Mindscape's incredible role-playing adventure. Tony Crowther, the man behind the computer, has 25 ways to extend your survival time.

1) Always, always, always collect the gold dropped by the aliens. It all comes in handy.

2) Open every cupboard you find. They are all there for a purpose, whether good or bad.

3) Find the computer for each level, or you won't get the co-ordinates for the next base.

4) If the computer's password doesn't work, then it isn't the correct one. Keep searching.

5) Doors don't work without power, so make sure they're open before you blow the generators.

6) Powerpoints are the same. Tank up with juice before you torch the supply.

7) Tool up, repair and refuel before you leave any base. The next shop may be a long way away, and you might not make it if you start out weak.

8) Powerpoints make an effective weapon. Put your hand in the socket and fire bolts of pure electricity.

9) Characters with high Dexterity hit harder and do more damage.

10) Characters with high Vitality are better able to dodge hits, and suffer less.

11) Characters with high Wisdom gain more experience.

12) Make sure you map out where you go. Getting lost is frustrating and pointless.

13) Remember to initiate all the droid chips.

14) Never leave a base without first obtaining a new planet-probe.

15) Throwing heavier objects inflicts more damage than throwing light objects, but you can't pick everything up. Some things are just too heavy.

16) Remember to update your skills as you gather more experience. Experience is gained more quickly during the early levels, so put it to good use.

17) Save regularly, using a different slot for each save. It is possible to become trapped, by locking yourself in. No save means having to do the whole lot again.

18) The very first airlock door won't let you out until the generators have been destroyed.

19) Avoid using Tindron heads. They're marginally better-sighted than bats, but not much.

20) During battles, you must move or die. Try using the keyboard for faster speed across the floor.

21) All the shops stock different items at different prices. Make a not of this as you need to save money to maximise your capabilities.

22) Attacking to the side is not as effective as attacking to the rear. The party at the back will attack aliens directly behind them as well as aliens to the left or right. Side-on attacks only attack in that direction.

23) Put your party leader at the back. This minimises the risk of someone taking his head off, and you being plunged into darkness.

24) Use doors to squash aliens, but stand in the next square to stop the aliens squeezing through to your side of the door.

NIGHT SHIFT

LUCASFILM • AMIGA and ST • £24.99

Beastly work, but great game play

If you've always dreamed of being the girl (or boy) that makes the ring that holds the oil that oils the spring, etc, then now is your chance. Lucasfilm's has a new thingamybob makes Toshiba look simplistic by comparison. In it, you play the role of Fiona or Fred Fixit – enterprising, but often unemployed folk who have just been hired to work on the BEAST. This scary-sounding monster is the Bingham Environmentally Active Solution for Toys, a huge machine which constructs thousands of injection-moulded plastic toys. It's owned by a company called Industrial Might and Logic, and it manufactures the many millions of small Lucasfilm-inspired dolls and toys. Skywalker dolls and mini-Darth Vaders sit cheek-by-jowl with Indiana Jones figurines and Zak McKracken puppets.

Your job is to tend to the BEAST's various needs, whilst meeting a production target. First you need to get the thing up and running, which involves a lot of leaping around, fixing things. Using a stationary bicycle, you must get power to the generator, and then get the furnace alight, using a match from your toolbox. Then it's up to the very top of the machine to tighten up a loose steam valve with your trusty spanner. After that, you must find the plug for the raw materials dispenser, and give a good kick to get it into its socket. Then (and only then) you may be able to get on with the business of manufacturing.

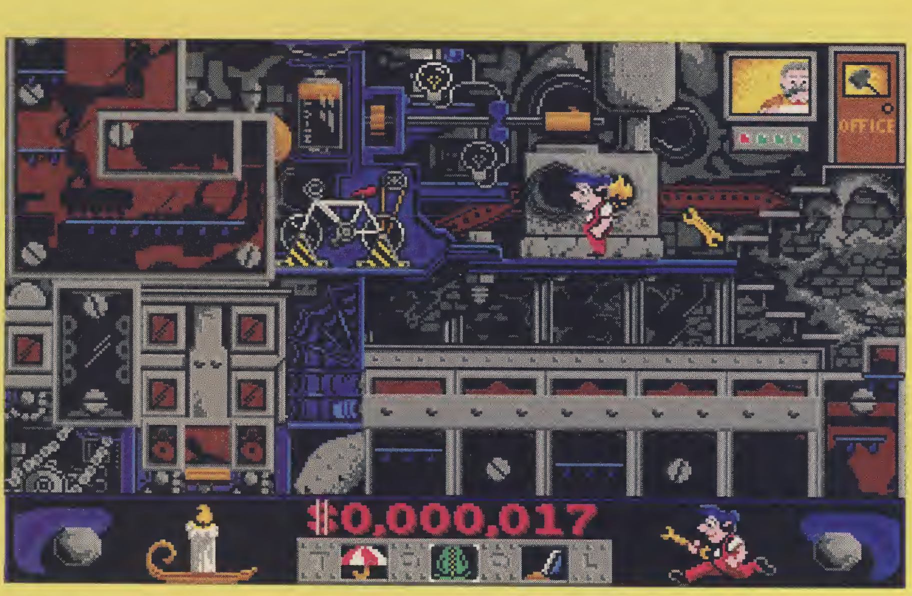
And that's a different can of worms altogether! As the various models pass along the production line, all kinds of things happen. Some models come out in the wrong colours, conveyor belts route the finished articles to a giant bin, instead of their boxes and Skywalker heads end up on Darth Vader bodies. All this mess has to be corrected by you, before you get your pay cheque and the rest of the evening off. Louse it up and you'll be going home with your P45 in your pocket!

And if that wasn't enough, there are many other trials and tribulations to give you a hard time. Occasionally, lemmings appear, clamping themselves to your feet the way dogs do when they're particularly pleased to see you. This does not help your mobility (not to mention the state of your shoe-leather) and your only defence is a small Venus fly-trap which you can hide in your toolbox. Deployed in time, these things gobble up small furry creatures and free you again.

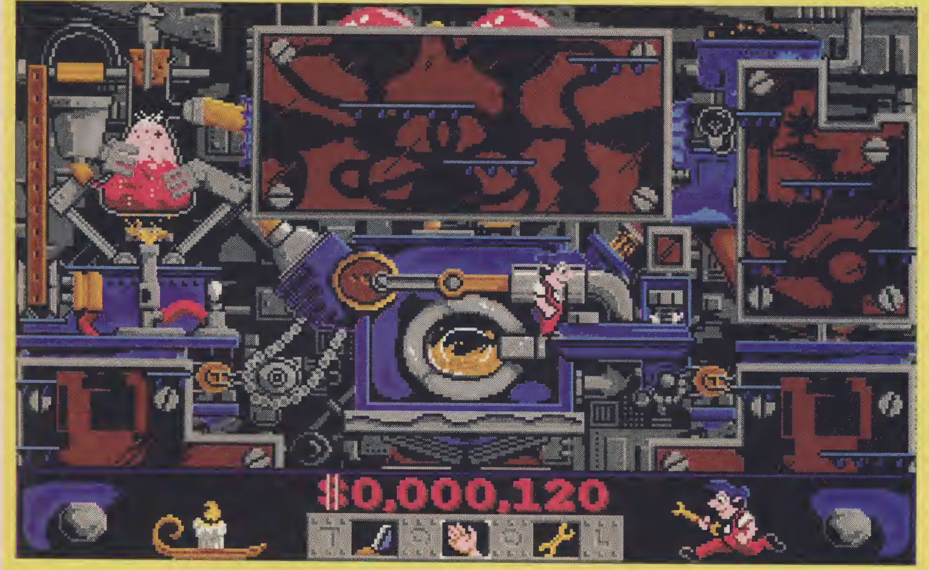
Although production is a difficult task, there are several gadgets which aid you, rather than hinder. Umbrellas can be used to float down from the very top of the BEAST at a safe but hasty speed, while balloons help you to reach the top without needing to follow the normal, convoluted path via belts, boilers and boltheads.

Night Shift is undoubtedly a cutie. But that doesn't mean it's just for kids. The colourful, detailed graphics animate beautifully, bringing to life the strange concept of the massive, maddening machine. Sound effects are typically arcade-style, while the background melody adds to the comic feel (though it gets a bit wearing after an hour or so).

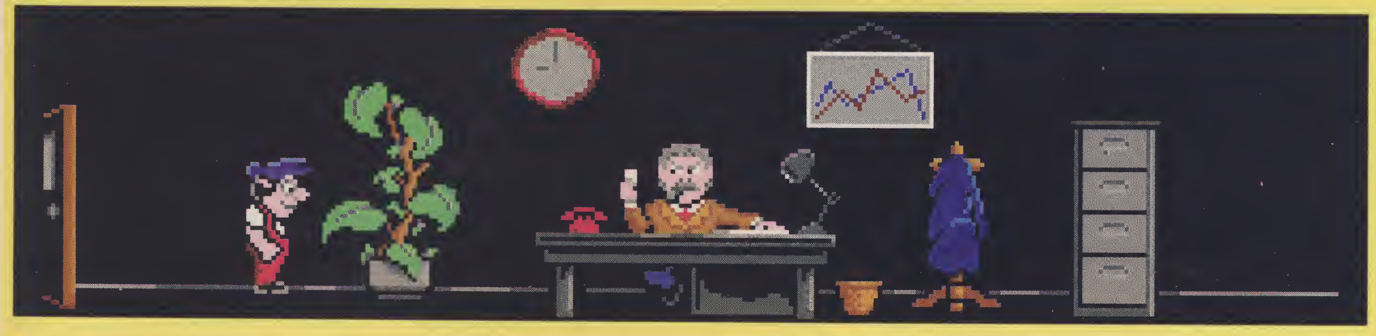
Couple this with the excellent introduction and epilogue sequences, showing Fred or Fiona in the boss's office or on their way home, and you have a wonderful game. Even the stock platforms-and-ladders element is so heavily disguised that you don't really think of it being that sort of game. There are some excellent moments of self-parody, which shows that even mega-giants like Lucasfilm can afford to poke fun at itself and get away with it. A healthy, non-violent (most of the time), taxing and yet still fun game, that's too good to miss.



• Nightmare machines, odious bosses and manufacturing mayhem. It all happens on the Night Shift.



• High up, near the top of the BEAST, Fred Fixit stares dumbly at the leaky steam valve. Time for the toolbox, yet again. A Nightshifter's work is never done!



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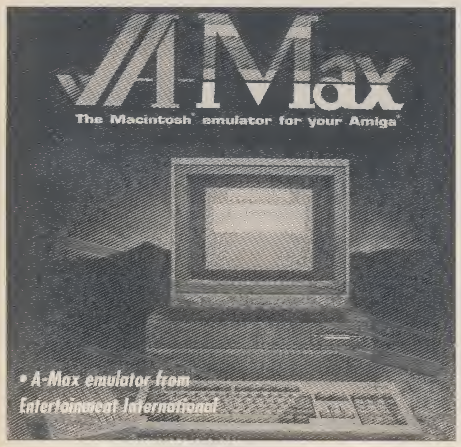
AMIGA EMULATES

MAKING THE MOST

When's an Amiga not an Amiga? When it's pretending to be something else. Damien Noonan looks at how the Amiga can be even more versatile.

The Amiga is a versatile machine, sure enough – but did you realise it is so versatile that it can pretend to be a whole heap of other things? All you need is the right kind of hardware or software. In some cases this means an 'emulator', which allows the Amiga to pretend it is another kind of computer. In other cases it's a clever bit of electronics that allows your Amiga to do something you wouldn't expect it to be able to. So when is an Amiga not an Amiga? When it's...

A MACINTOSH



• A-Max emulator from Entertainment International

One of the most impressive and most popular of all the emulators is A-Max from Entertainment International. It allows your Amiga to pretend it's an Apple Macintosh and to run Mac software. Macs are a good deal more expensive than Amigas, feature an extremely easy-to-use WIMP system for running programs and a great deal of very high-quality software, especially for Desktop Publishing and graphics.

There are three main drawbacks to A-Max. First, to emulate the Mac's very high-resolution monochrome screen display A-Max runs in Interlace mode, which flickers like crazy and can be unpleasant to use. Second, to use A-Max you must get hold of an Apple Mac ROM chip and operating system disk, which is not at all easy (although you can now buy A-Max with the necessary chip) and is of dubious legality. Third, A-Max cannot run all Mac software: the protection systems of some mean they won't run on the Amiga.

The latest version of A-Max comes in two different forms: A-Max 2 and A-Max 2 Plus. The latter is a hard card variation to plug inside the Amiga 2000 and includes several enhancements over the basic unit, which is a grey box that plugs into the back of the Amiga. The new A-Max 2 has the great advantage of hard drive support – anyone who has used a Macintosh will tell you that it really needs a hard drive to be viable. The original A-Max costs £134 without Mac ROM, A-Max 2 is £169.95 without ROM, £269.95 with and A-Max 2 Plus will cost £249.95 without or £349.95 with. Telephone Entertainment International 0268 541126.

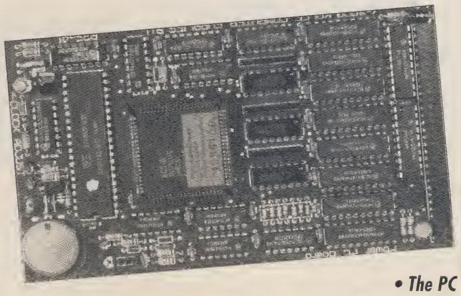
...OR A PC

The industry standard set by the IBM PC and compatibles is the most useful to be able to tap into. One way to do this is enable your Amiga disk drives to read and write PC disks so that you can transfer files to and from PCs and Amigas – and also, incidentally, to and from more the modern Macs. The best way to do this is with a utility called CrossDOS, which runs as a background task enabling you to save out of your favourite programs straight to a PC disk. All you have to do is specify your drive as, say, pc0: rather than df0: when telling the Amiga where to save to. CrossDOS is 100 per cent efficient and foolproof. It costs a mere £29.99 from Power on 0234 273000.

The other way to tap into the PC pool is to buy a hardware-based PC emulator. These are more or less a PC on a PCB and are available both for the Amiga 2000 and the 500.

The 2000 version is the famous Bridgeboard, manufactured by Commodore, which slots into the 2000 internally and comes in many different PC varieties. It is excellent, but expensive, costing a four-figure sum which is actually in excess of the price of a cheaper PC.

There are two Amiga 500 PC cards, both of which slot into the 'trapdoor' underneath the Amiga 500. Slightly the older is the PC Powerboard, made by KCS in Holland and sold over here by Bitcon (88 Bewick Rd, Gateshead NE8 1RS) at a price of £299 which includes handy extras like MS-DOS v4 and PC GWBasic. The other is the Vortex AtOnce board which emulates a PC-AT and is available from Silica (081-309 1111) at a price of £199, though the MS-DOS operating system will cost an extra £50.



• The PC Powerboard made by KCS.

WHEN IT'S A BBC MICRO

The BBC Emulator is a software-only emulator that enables the Amiga to run a large amount of BBC software. It was originally conceived as part of Commodore's strategy to take over the market that was being conceded by Acorn's ageing 8-bit machine, particularly in primary schools. It is an excellent idea because much of the educational software written for the Beeb is very good indeed.

The Emulator works well, but because it only works with legal 6502 programs it will not necessarily run all BBC software, particularly games. It is available from Commodore (0628 770088) or as part of the Class of the 90s educational pack. The newest version has just been released by GeniSoft (0753 680363) for £29.99.

OR EVEN A SPECTRUM!

Yes, believe it or not, there is a Spectrum emulator for the Amiga. And it doesn't run as fast as a real Spectrum unless you run everything in mono. Sound pointless? Well, not entirely. It includes a special interface which enables you to load Spectrum programs straight from tape and save them out to Amiga disk, so if you used to own a Speccy and would hate to bin all those 8-bit classics, it could be handy. Only problem is we do not currently know of a UK supplier – the unit is manufactured by Digimail SRL of MIlan, Italy on 39 02 426559.

A DIFFERENT AMIGA...

No, not an Amiga emulator for the Amiga. This is a new kind of Amiga that even Commodore has very little to do with. Checkmate's A1500 is basically a recase of the A500 with a separate keyboard and a nice, compact box for the CPU and internal disk drives. Apart from the fact that it looks a sight smarter, the recase has a couple of advantages. Tha case is sturdy metal and puts the joystick ports and disk drives (yes, there is space for two internal disk drives) at the front. It includes room internally for genlock or MIDI interface cards, as well as allowing for expansion units to contain other cards. The A1500 can be bought as a kit so you can fit your own A500 into it, or you can send your computer off and they will convert it for about £200. Phone 081-923 0658.

A FAX MACHINE

Fax machines – for the uninitiated, gadgets that transmit pictures down the phone line and print them out at the other end – are becoming an increasingly large part of modern telecommunications. They're dead handy, but very expensive so not many people have them in their own homes.

Fast FAX from Microdeal allows you to turn your Amiga into a full-featured Fax machine for the relatively low price of £699. This may sound like an awful lot of money, but if you run a small business based around Amigas it could prove a good alternative to buying a separate Fax machine. You can buy Faxes a fair bit cheaper, but not with the range of features that Fast FAX offers. Manufacturer Microdeal is on 0726 68020.

A TELETEXT TELEVISION!

Microtext is an adaptor unit that plugs into the back of the Amiga and allows it to receive Teletext signals from the BBC's Ceefax and ITV's Oracle services. It also comes with an added bonus – to receive the Teletext signals, which are in with the ordinary TV signals of the respective broadcasting companies, it also has to act as a TV tuner. So all you have to do is plug the unit in, attach a TV aerial to the back and you have an Amiga TV. The software lets you store and print pages and it would be possible, for instance, for it to print out a regular TV schedule every day and when you get home from work, there it is waiting for you. Good stuff and, considering it can replace a television, a bargain at £143.50. Available from Microtext on 0705 595694. ■

ST SPEAKS FOR ITSELF

Fed up with the features offered by your favourite word processor, graphics package or game? Mark Higham looks at the programming languages which could bring your ST a new lease of life.

Depending on how heavily you want to get involved with programming, there are a variety of different languages to choose from. BASIC is the easiest to learn and use but it's also one of the slowest – not much use for games. Assembly is the professional programmers' choice since it's the internal language used by your ST. Each language has its own advantages and aficionados. Here is the pick of the crop across several different fields.

BASIC is most popular programming language and unfairly maligned by those who haven't used modern versions. Its advantages are its friendliness to the first time user, its interactiveness and its forgiving nature with errors. Super modern versions of BASIC can be very good – often having compilers and structures like procedures borrowed from 'better' languages. BASIC is a good all-rounder.

The second most popular language, C, claims to offer near machine-code speed without the complexity of low-level programming. C can be a little hard to understand at first, as its source code is not as self-explanatory as more verbose languages. The structure of the language, though, enables you to do almost anything you like with the machine. Obscure bugs can produce the strangest effects in C programs.

Pascal produces very readable source programs; it also majors on rigid constraints to make you write 'good' code. Pascal is only available as a compiler and is good if you like a language to check what you're doing. It is happy to throw up all kinds of error messages during compilation to let you know of syntax and program errors before you get near to running the code. Pascal is particularly good for writing long programs, as its imposed structure makes the source code maintainable. Its string handling is not as advanced as BASIC's, nor is its machine access as good as C's.

Assembler – because compilers generate machine code by set formulas, high-level language programs are rarely as fast as if you write them directly in Assembler yourself. Assembler is hard to write because it takes you 10,000 lines to do what 1,000 lines of C would do, and any mistakes usually cause an instant machine crash! If you need really fast code, most languages let your write the critical routine in assembler and leave the rest in C or whatever.

PROGRAMMING IN C

Hisoft C Interpretor • £49.95 • 0525 718181 • All STs

This is one of few C interpreters which actually assumes you know little about programming in C. The software is aimed specifically at BASIC programmers who are looking to move up to C.

This is an excellent interpreter for the newcomer, enabling you to carefully watch your code using trace options so that you can see exactly where it went wrong and why. There's even the ability to dump each line of code to the printer once it's been executed. On top of this, it checks all point assignments and trap exceptions to avoid any crashes.The interpreter is supplied with a 470-function library of commands and is a very close implementation of the ANSI standard.

Hisoft also includes a 250 page manual to lead you into the complexities of programming in C. If that's not enough, there's an on-line help feature which displays text files to guide you through the harder operations.

ASSEMBLY

DEVPAC 2 • £59.95 • All STs • HiSoft • 0525 718181

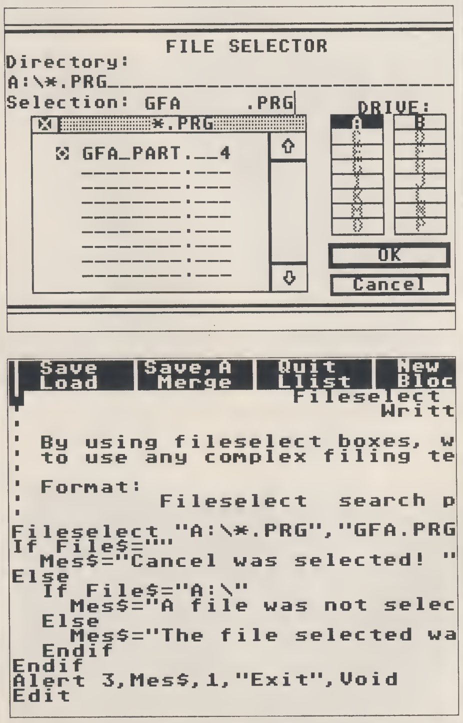
Devpac ST is a fast assembly language development system. It includes all the various parts necessary for developing machine code programs, including a macro assembler, editor and linker. Features may be accessed by using conventional menus or by key shortcuts.

The debugger, which is accessed via the editor, enables you to examine programs and memory, execute instructions one at a time and trap processor exceptions. Although the debugger is of the low-level variety, displaying such things as 68000 instructions and bytes of memory, it can be used for debugging programs written with any compiler that generates machine code. If the compiler or assembler has the option to dump the symbols into the binary code, then you see procedure and function names with the code. You're even able to view your original source code. For really huge programs, symbolic debugging is a luxury.

Fast assembly speed, powerful directives for optimising code, extensive conditional assemby options, symbolic debugging... Devpac 2 has it all plus a lot more. It is packed with features and has all machine code program developers could want.

BASICS

GFA BASIC 3 • £64.95 • Glentop • All STs



```
                FILE SELECTOR
Directory:
A:\*.PRG_________________________
Selection: GFA      .PRG
```

```
                                Fileselect
                                     Writt

  By using fileselect boxes, w
  to use any complex filing te

  Format:
             Fileselect  search p

Fileselect "A:\*.PRG","GFA.PRG
If File$=""
  Mes$="Cancel was selected! "
Else
  If File$="A:\"
    Mes$="A file was not selec
  Else
    Mes$="The file selected wa
  Endif
Endif
Alert 3,Mes$,1,"Exit",Void
Edit
```

• GFA's work environment: editing, bug-fixing and execution can all be done from the same place. The editor (in action) checks syntax and formats the program lines.

After seeing Computer Concept's Fast BASIC, Glentop responded by importing GFA BASIC from the land that produced 'Vorsprung durch Technik'. Updated versions have been drifting in ever since and version 3 is much more than a slight improvement with greater speed, more commands, bigger and better manual and an enhanced editor.

GFA is crammed with powerful instructions that often replace groups of commands from other dialects of BASIC. For instance, GET and PUT enable software sprites to be manipulated effortlessly, POLYLINE and POLYFILL help you draw pattern-filled shapes quickly, menu bars and windows can be set up and interrogated with OPENW and ON MENU GOSUB.

Traditionally, speed – or lack of it – has been the reason for programmers choosing languages other than BASIC to create games and business utilities. GFA gives the lie to this for many operations, as it is faster than a good few compiled high-level languages. GFA's wealth of variable types (boolean, byte, word, integer, float and string), memory management and sophisticated instructions make sure that it is always one of the fastest programming languages around.

PASCAL

Prospero Pascal • Prospero • £99.99 • 081-741 8531 • All STs

There are very few Pascal compilers on the ST, but this is one of the better ones. Prospero's programming shell comes with its own text editor which is particularly easy to get to grips with.

Contained in the program is Prolib – a librarian utility used to manage object files. New files are formed by combining old ones and useful information about files is extracted. A handy cross-reference utility is supplied as part of the deal and this lists where variables are used in the code. A symbolic debugging tool is also available and this enables you to track programs and look at the contents of memory.

The compiler is excellent and can be set to accept standard Pascal only if you're using it for coursework. There are extensive enhancements to the Pascal language which make it easier to use. The compiler library has bindings so that you can access the ST's internals. The compiler comes with a good library of bindings. The manual is disorganised and badly laid out, but there are two excellent manuals devoted to GEM which go a long way towards making up for them. With an integrated editor, this is the best Pascal package on the market. ■

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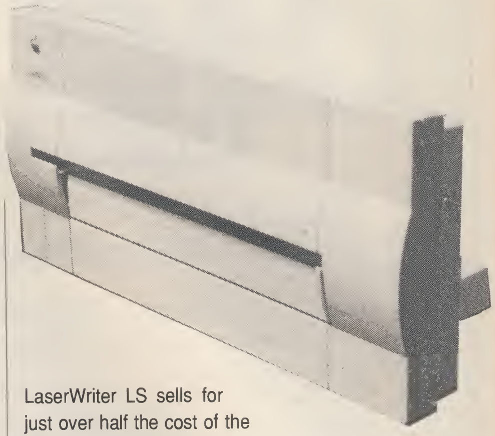
PRINTERS MADE PERFECT

Laser quality on every desktop. That's what Apple is aiming for, but has it got there? Ian Wrigley tests two new printers just released onto the market and sees how they compare with what's already there.



On March 11, Apple finally silenced the rumours about a possible low-cost printer by launching two new machines; and the company has surpassed itself both by producing the printers at extremely low costs, and by including TrueType, the company's new font technology, well in advance of its expected release date later this year.

The two new printers are the Personal LaserWriter LS, a laser printer which will sell for around £920, and the StyleWriter, Apple's first venture into bubblejet technology, which is expected to be available around £345.

According to Apple, the printers have been produced in order to "put laser quality on every desktop." And it is an aim which the company seems to have achieved: the 360 dots per inch StyleWriter produces a quality of text output which is virtually indistinguishable from that of Apple's £4,140 LaserWriter IINTX.

To achieve the required quality of text output at an affordable price, Apple has included an INIT (Macintosh System addition) with each printer which will allow the Mac to use TrueType fonts. These fonts, which will be a central part of System 7.0, the Mac's new operating system due out in mid-May, are scalable to any size without loss of quality. Previously, to achieve such quality Apple would have had to include a PostScript interpreter with the printers – a move which would have added several hundred pounds to the prices.

PRINTER SPECIFICATIONS

Appearing extremely similar to Apple's Personal LaserWriter SC, the LS is in fact a radically different machine inside. Apple has developed numerous custom chips to reduce the amount of hardware required to drive the machine, which has meant that the Personal LaserWriter LS sells for just over half the cost of the SC, previously Apple's cheapest laser printer.

The printer is based on the 4 pages-per-minute, 300 dpi (dots per inch) Cannon LBP-LX printer engine, which is found in many lower-cost laser printers. It comes with an integral 50-sheet paper tray, with an option to add a 250-sheet paper cassette if required, and contains 512K of RAM. Connection to the Macintosh is via the printer port.

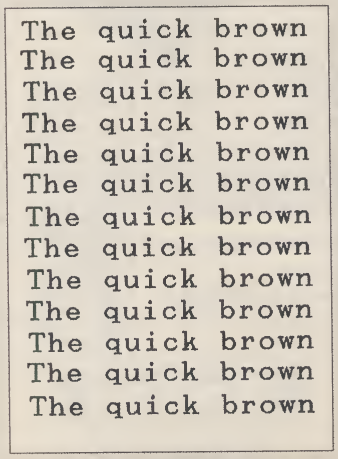
The StyleWriter is based on Cannon's BJ10e bubblejet engine, which produces 360dpi. Rather slower than the LaserWriter LS, the StyleWriter will output one page per minute when printing in 'best' mode, or two when printing in the lower-quality 'faster' mode. It comes with a sheet feeder, although this can be removed.

BUBBLEJET vs DOT MATRIX: WHICH ONE WINS?

Dot matrix printers have been around for a long time. They work by a ribbon with an array of pins. The ribbon hits the paper, and leaves ink in the shape of the pins. Early dot matrix printers had a 9x9 array of pins, which produced characters that were readable, but nothing like the quality of a typewriter. To combat this, manufacturers added more pins, until many of today's dot-matrix printers are 24-pin – that is, they have a 24x24 array of pins, which give much higher quality.

By contrast, bubblejet printers (sometimes called inkjet) work by squirting tiny bubbles of ink directly at the paper. An immediate effect of this is that a bubblejet printer is far more quieter than a dot-matrix, as there is nothing bashing against the paper. But the quality of bubblejet printers is also often better than that of dot matrix machines.

To compare the difference for yourself, we have included here output from a 24-pin dot matrix printer, alongside two print samples from the Apple StyleWriter – one from the machine in 'faster' mode, and one when it was printing in 'best' mode. Also for comparison is output from a laser printer. You will see that, while the laser printer output is unquestionably the best, the bubblejet output is extremely close.



The quick brown
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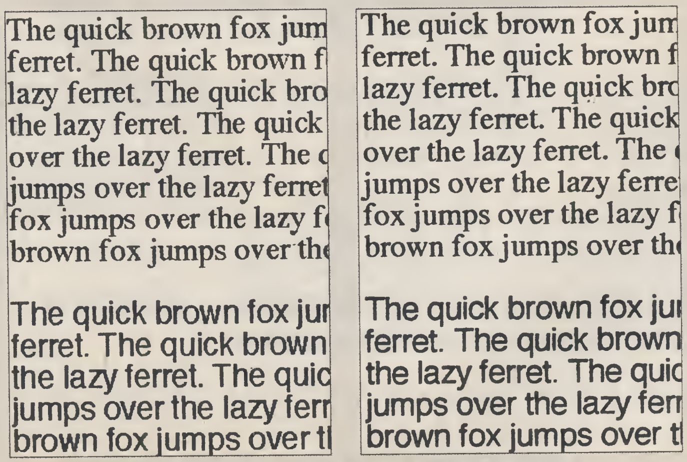
The quick brown

• Text printed on a 24-pin dot matric printer.



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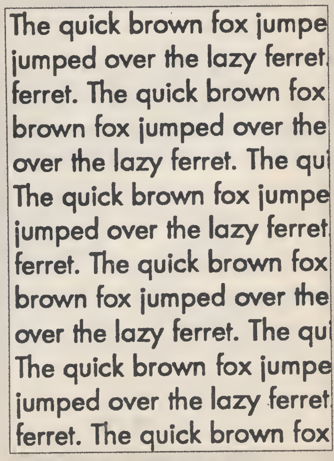
• Samples from the Apple StyleWriter : "Faster" mode (left) "Best" mode (right)



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jumped over the lazy ferret.
ferret. The quick brown fox

• The best: text printed on a laser.

The StyleWriter cannot be networked – it may only be connected to one Mac at a time. And unfortunately it cannot print in 'background' mode – other Apple printers have been able to print while the user does something else on the machine, whereas the StyleWriter holds up other tasks until output is complete. However, most Mac users will happily live with this small inconvenience in return for the quality the machine produces; especially when the price is taken into consideration.

MAC PRINTER OPTIONS

Until now, owners of Macs who wanted a reasonable-priced printer had two options: either go for the ImageWriter II, a 9-pin dot matrix not exactly beloved by many of its owners, or buy a third-party printer. The problem with going for the second option was that many printer manufacturers did not provide driver software for the Mac, so owners were stuck with public domain solutions, which were often full of bugs or did not use the printer to its full potential.

With the release of its two new printers, though, Apple has solved the problem. People who were considering purchasing a dot-matrix printer will be just as happy – or happier – with the StyleWriter. It costs about the same as a 24-pin dot-matrix, provides quality at least as good and has the advantage that it is an official Apple product, so upgrades to things like the System software are guaranteed to work with it. On the other hand, anyone considering connecting a third-party laser printer to their Mac would do well to look seriously at the Personal LaserWriter LS. Again it has the advantage of being an official Apple product, and at a £920 you would be hard pressed to find a cheaper laser printer of similar quality (or, indeed, at all!).

Apple's printer prices now look like this:

ImageWriter II	£400
StyleWriter	£345
Personal LaserWriter LS	£920
Personal LaserWriter SC	£1,564
Personal LaserWriter NT	£2,295
LaserWriter IINT	£3,565
LaserWriter IINTX	£4,140

Apple says that it will not discontinue the ImageWriter II, since some people need a dot matrix printer for printing multi-part stationery. The Personal LaserWriter SC, on the other hand, is likely to be discontinued in the near future as it offers no benefits over the Personal LaserWriter LS. ■

POSTSCRIPT AND TRUETYPE:

Fonts come in two sorts: bitmapped and outline. A bitmapped font is stored inside the computer as a series of discrete points which make up each character. So when a character is increased in size, all that happens is that the points are scaled up, resulting in a 'jagged'-looking character.

Outline fonts, on the other hand, are stored as mathematical descriptions of the curves and lines which make up a character's shape. So when increased in size, outline fonts do not exhibit the jaggedness of bitmaps; they are always sharp.

Until TrueType came along, the standard outline font format was known as PostScript. For high-quality fonts on the Mac, PostScript was the only option; which meant that its inventors, Adobe, could license the technology for large sums of money. One of the most lucrative licensing deals was for the PostScript interpreter inside printers which converted the mathematical description of characters, graphics and so on into the final dots which make up the printed page. Although some clone interpreters appeared, many printer manufacturers – Apple included – preferred to use the official Adobe version, paying the company hundreds of pounds for each printer sold.

Partly for this reason, Apple decided to create its own outline font format, known as TrueType. Along the way, the company has been joined by a number of others, including Microsoft, which will be including the ability to display TrueType fonts in version 3.1 of the IBM-PC user interface Windows.

At present, the vast majority of fonts available for the Mac are PostScript, but most font manufacturers such as Bitstream, Monotype and Linotype have said that they will be adapting their fonts to TrueType format. In fact, Bitstream has committed to converting the whole of its library; the Times and Helvetica fonts which come with the new printers have been designed by the company.

THE BEST SYSTEM?

A Macintosh Classic combined with a StyleWriter now costs around £1,005 for the single floppy machine, £1,375 for the 40Mb hard drive option. This makes it a viable proposition as a starter machine both for small businesses and for those who'd previously have had an IBM PC-compatible and printer for home use.

As a comparison, we specified and costed out two systems: a Mac Classic with StyleWriter and a PC-AT with a dot-matrix printer.

To get the same type of performance from a dot-matrix printer as from the StyleWriter, a 24-pin machine would be needed; a trawl through a recent copy of *Express* came up with an average price of around £255 for a 24-bit printer from 'box shifters'. Then add the cost of an 80286 PC (some would say that a fairer comparison would be an 80386); again, a flip through the magazine came up with a rough average of about £980 (with a mono monitor and a hard disk). Throw Windows 3 in with that and your set up will set you back somewhere in the region of £1,300 – almost the same as for the Mac system.

Software, it is true, tends to cost slightly more for the Mac than for PCs, but there are some excellent public domain and shareware packages available; the chances are that you will be able to find everything you need for less than £100 in shareware fees – this figure will be roughly the same for either the Mac or the PC.

So, you could either have a PC with a 24-pin dot matrix printer or a Mac Classic with a StyleWriter, for almost identical costs. Now who says that the Mac is overpriced...?

For those who are convinced that the Mac's not for them, there are a number of options available to owners of other computers. For starters, have a look at these:

- Canon BJ10e/BJ130e. The BJ10e costs £397, while the BJ130e, which is larger, faster and has a longer quoted lifetime, costs £915.

- Epson SQ850/SQ2250. The SQ850 is an 80-column machine which costs £885. The 132-column SQ2250 sells for £1,150.

- Hewlett-Packard Deskjet. This is a 300dpi machine, which sells for £690.

Remember that the prices quoted are recommended retail prices; you will probably be able to get the printers for less if you shop around.

• The Hewlett-Packard Deskjet. This 300dpi machine costs £690 – £340 less than Apple's StyleWriter.

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The Fax/modem card is the SRM 2496 from Insta-Com. Made in the US and distributed by Datatech in the UK, it offers group 3 Fax capability up to 9600baud. The modem runs at 2400baud and is controlled by the extended Hayes set, the industry standard for modem communications. The software to drive the modem is the US program COMit and this works from a helpful menu screen and on disk help files.

Fax jobs are done at up to 9600baud corresponding to the group 3 protocol, but running four times as fast as the original group three specification. The supplied software allows you to set the fax up in the background and carry on working on your PC. Incoming faxes can be viewed on the screen in the form of a pop up menu. There are also facilities to capture files from applications files and send them directly as a fax. The card costs £199 from Datatech on 0533 460181.

FaxBuilder allows you to customise and design your own faxes. The what you see is what you get interface means that what you see on the screen is the same as the one you send by fax and a template directory allows you to store your 20 most used images. FaxBuilder is compatible with many word processors and allows direct import. The program is easy to use and uses typefaces that are selected for their legibility via fax transmission. A library of 25 clip art images and four fonts can rescale without losing detail or clarity.

FaxBuilder can also import graphics images in UWI, PCX and TIFF formats. FaxBuilder costs £45.95 from LTS on 0386792617.

Now all you have to do is answer the questions! Put your answers on the coupon and fax it to *Express* on 0225 482018 by no later than March 30.

1) The Protocol used for Group 3 Faxes is:
a) Modified Huffman Code
b) Modified Starch
c) Pascal
d) Reverse Polish notation

2) The book by Desmond Bagley in which a train set turns out to be a computer is called:
a) The Train Set
b) The Computer
c) The Friend
d) The Enemy

3) Which companies with the phone numbers 0533 460181 and 0386 792617 are a great place to get communications hardware and software?
a) British Rail and Sealink
b) Mothercare and Playboy
c) Dataflex and LTS
d) Mercury and Telecom

4) What fluid was used in the first generation of faxes?
a) Crude Oil
b) Solvent
c) Gravy
d) Milk

5) Fax is ..
a) An abbreviation of FACTS
b) A posh person's pronunciation of something rude
c) An abbreviation of FACSIMILE
d) German for image

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• Printed by Redwood Press, Melksham, Wilts
• Distributed in UK and Eire by MMC Ltd (0483 211222), rest of world by Comag (0895 444055)

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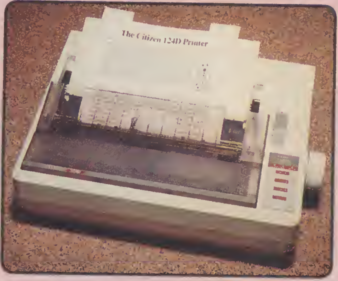
144 CPS DRAFT 24 PIN



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TOTAL RRP:	£350.80
SAVING:	£144.95
SILICA PRICE:	£205.85

£179
+VAT = £205.85

192 CPS DRAFT 9 PIN

Swift 9 Colour Printer

SWIFT 9 - COLOUR!

The Citizen Swift 9 is perfect for those who require high quality dot matrix black or colour printing at a budget price. The print quality of Swift 9 rivals that of other manufacturer's 24-pin models.

- *9-pin Impact Printer*
- *Print Speed 192cps Draft*
- *3 NLQ Fonts (48cps)*
- *8K Buffer*
- *Epson & IBM Graphics Emulation*
- *Advanced Paper Parking*
- *FREE Starter Kit*
- *FREE Colour Kit*

FREE! COLOUR KIT

RRP	£309.35
STARTER KIT	£29.95
COLOUR KIT	£39.95
TOTAL RRP:	£379.25
SAVING:	£161.90
SILICA PRICE:	£217.35

£189
+VAT = £217.35

192 CPS DRAFT 24 PIN

Swift 24 Colour Printer

SWIFT 24 - COLOUR!

The Citizen Swift 24 is one of Europe's best selling printers and has won awards including Printer Of The Year 1990. Its rapid print speed, quality and black or colour options, make it a natural choice.

- *24-pin Impact Printer*
- *Print Speed 192cps Draft*
- *4 NLQ Fonts (64cps)*
- *8K Buffer*
- *Epson, IBM & NEC P6+ Emulation*
- *Advanced Paper Parking*
- *FREE Starter Kit*
- *FREE Colour Kit*

FREE! COLOUR KIT

RRP	£419.75
STARTER KIT	£29.95
COLOUR KIT	£39.95
TOTAL RRP:	£489.65
SAVING:	£191.80
SILICA PRICE:	£297.85

£259
+VAT=£297.85

PRINTER ACCESSORIES

SHEET FEEDERS		
PRA 1200	120D	£74.75
PRA 1215	124D/Swift 9/24	£96.60
PRA 1228	124D/Swift 9/24	£46.00
SERIAL INTERFACES		
PRA 1189	120D+	£62.10
PRA 1209	Swift 9/124D	£34.50
PRA 1709	Swift 24	£28.75
PRINTER STAND		
PRA 1242	124D/Swift 9/24	£26.95
ORIGINAL RIBBONS		
RIB 3502	120D/Swift 9 Black	£4.03
RIB 3924	124D/Swift 24 Black	£5.18
RIB 3936	Swift 9/24 Colour	£17.25
COLOUR KITS		
PRA 1236	Swift 9/24	£39.95

All prices include VAT and Free delivery.

FREE! STARTER KIT

Every Citizen printer from Silica, comes complete with the Silica Printer Starter Kit, including everything you need to get up and running with your new printer immediately, FREE OF CHARGE!

- *3½" Dual Format Disk with Amiga & ST Printer Drivers*
- *3½" Disk with Drivers for Microsoft Windows 3*
- *2 Metre Parallel Printer Cable*
- *200 Sheets of High Quality Continuous Paper*
- *200 Continuous Address Labels on Tractor Feed*
- *5 Continuous Envelopes on Tractor Feed*

If you already own a printer, and would like a Silica Printer Starter Kit, you may order one (ref: KIT 5000) for the special Silica price of £24.95 - £5 off RRP!

NORMAL RRP
£29.95

200 PRINTER PACK

SILICA SYSTEMS OFFERS YOU

- *FREE OVERNIGHT COURIER DELIVERY:* On all hardware orders shipped in the UK.
- *TECHNICAL SUPPORT HELPLINE:* Team of PC technical experts at your service.
- *PRICE MATCH:* We normally match competitors on a "Same product - Same price" basis.
- *ESTABLISHED 12 YEARS:* Proven track record in professional computer sales.
- *£13M TURNOVER (with 60 staff):* Solid and reliable with maintained growth.
- *BUSINESS/EDUCATION/GOVERNMENT:* Volume discounts available for large orders.
- *SHOWROOMS:* Demonstration and training facilities at our London & Sidcup branches.
- *THE FULL STOCK RANGE:* All of your PC requirements from one supplier.
- *FREE CATALOGUES:* Will be mailed to you with offers and software/peripheral details.
- *PAYMENT:* By cash, cheque and all major credit cards.

Before you decide when to buy your new printer, we suggest you think very carefully about WHERE you buy it. Consider what it will be like a few months after you have made your purchase, when you may require additional peripherals or software, or some technical help and advice. And, will the company you buy from contact you with details of new products? At Silica Systems, we ensure that you will have nothing to worry about. Silica Systems is one of the UKs leading independent computer dealers and provides a quality service to users at home, in education and in business throughout the nation. Silica have been established for over 12 years, and have an annual turnover of £13 million. With our unrivalled experience and expertise, we can now claim to meet our customers requirements with an understanding which is second to none. But don't just take our word for it. Complete and return the coupon now, for our latest Free literature on the Citizen printer range and begin to experience the "Silica Systems Service".

SILICA SYSTEMS

MAIL ORDER: 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX **Tel: 081-309 1111**
Order Lines Open: Mon-Sat 9.00am-6.00pm No Late Night Opening Fax No: 081-308 0608

LONDON SHOP: 52 Tottenham Court Road, London, W1P 0BA **Tel: 071-580 4000**
Opening Hours: Mon-Sat 9.30am-6.00pm No Late Night Opening Fax No: 071-323 4737

LONDON SHOP: Selfridges (1st Floor), Oxford Street, London, W1A 1AB **Tel: 071-629 1234**
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SIDCUP SHOP: 1-4 The Mews, Hatherley Rd. Sidcup, Kent, DA14 4DX **Tel: 081-302 8811**
Opening Hours: Mon-Sat 9.00am-5.30pm Late Night: Friday until 7pm Fax No: 081-309 0017

To: Silica Systems, Dept NCE-0391-54, 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX

PLEASE SEND CITIZEN PRINTER INFORMATION

Mr/Mrs/Ms: .... Initials: .... Surname: ....

Address: ....

....

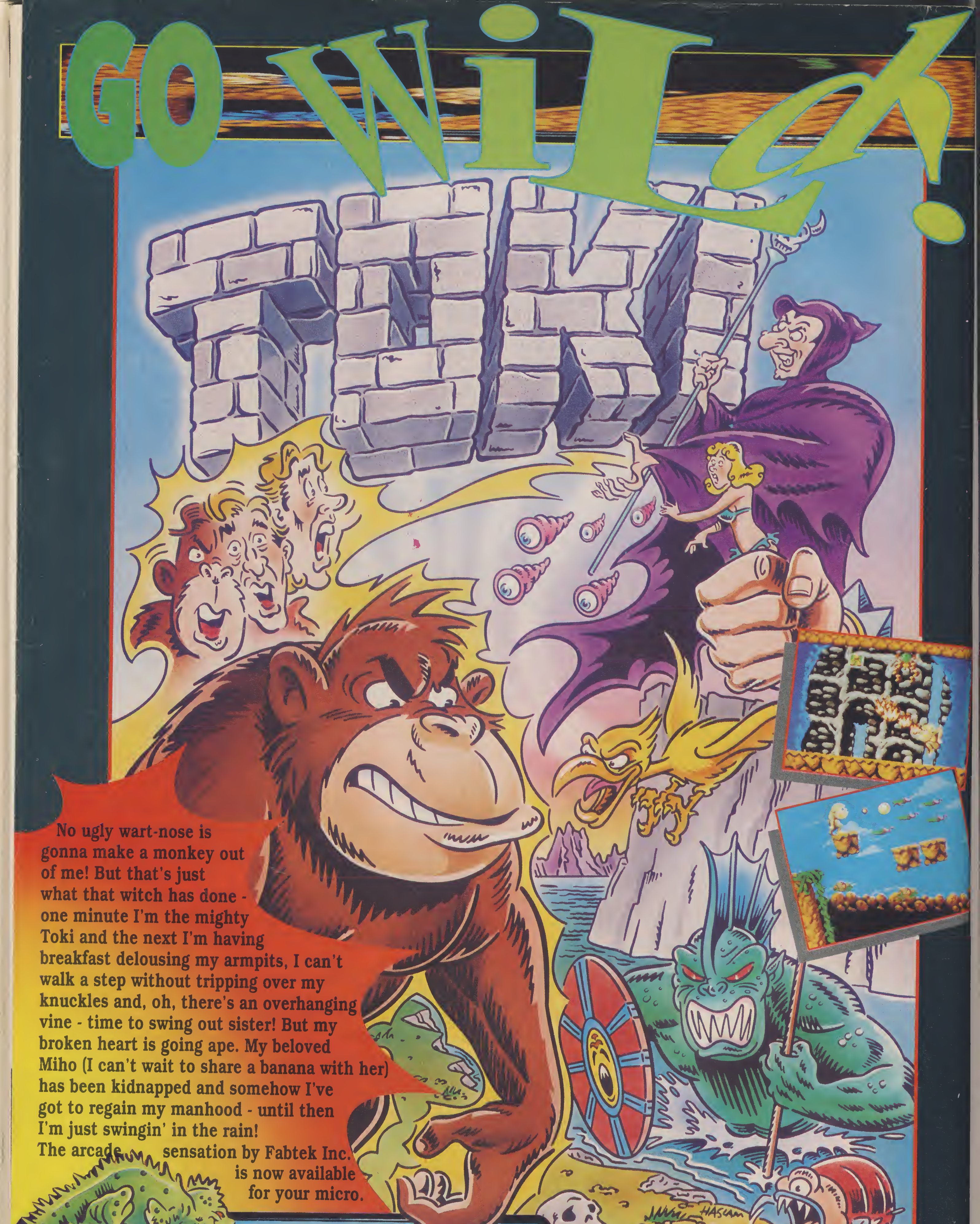
.... Postcode: ....

Tel (Home): .... Tel (Work): ....

Company Name (if applicable): ....

Which computer(s), if any, do you own? ....

E&OE - Advertised prices and specifications may change - Please return the coupon for the latest information.



No ugly wart-nose is gonna make a monkey out of me! But that's just what that witch has done - one minute I'm the mighty Toki and the next I'm having breakfast delousing my armpits, I can't walk a step without tripping over my knuckles and, oh, there's an overhanging vine - time to swing out sister! But my broken heart is going ape. My beloved Miho (I can't wait to share a banana with her) has been kidnapped and somehow I've got to regain my manhood - until then I'm just swingin' in the rain!

The arcade sensation by Fabtek Inc. is now available for your micro.

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